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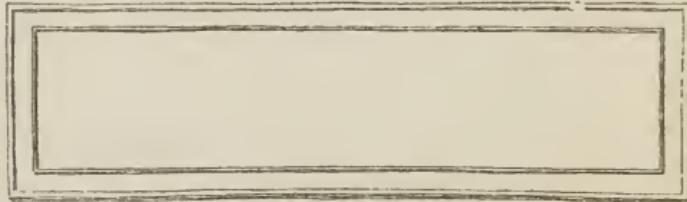
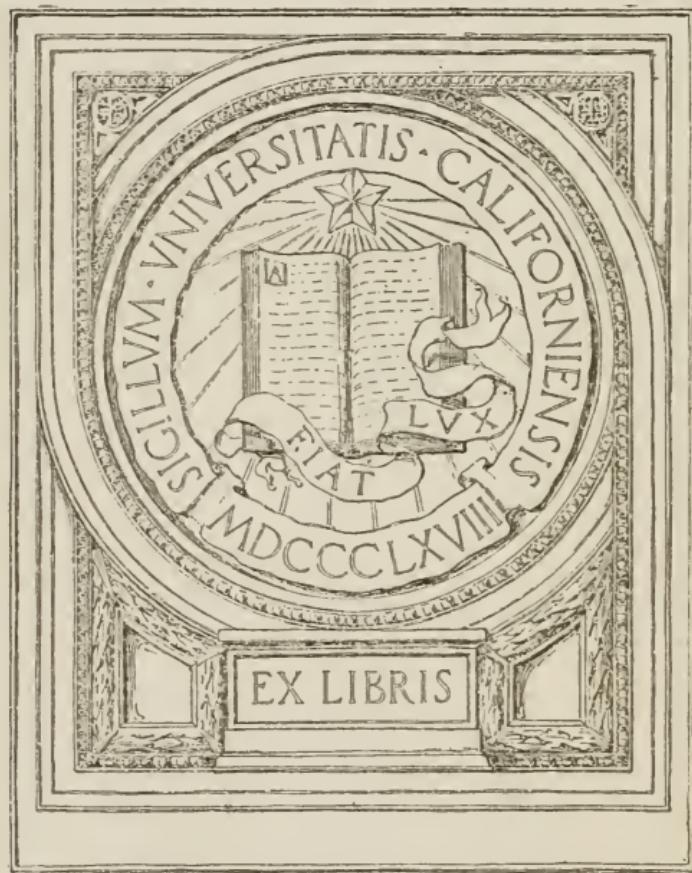
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THE SHIP AND GUN DRILLS
U. S. NAVY

1922

GIFT OF



THE
SHIP AND GUN DRILLS
U. S. NAVY

1922



WASHINGTON
GOVERNMENT PRINTING OFFICE
1922

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NAVY DEPARTMENT,
Washington, D. C.

1. The Ship and Gun Drills, U. S. Navy, is approved and issued to the service, and supersedes all previous editions.
2. The instructions contained herein shall be strictly followed.

E. W. EBERLE,
Acting Secretary of the Navy.

II

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INTRODUCTION.

In the revision of "Ship and Gun Drills, 1914," it has been constantly borne in mind that efficiency in battle is the goal of all naval training. For the individual ship of any type this means that its facilities of offense and defense be developed to the utmost. These facilities, for convenience grouped under the heads of ship control, fire control, and communications, must not only be operated at maximum efficiency, but all must be coordinated to produce an entity—the fighting ship.

With this ideal in mind this book has been revised in view of experience prior, during, and subsequent to the World War. Especial emphasis is laid on the necessity of such organization and training as will insure vessels keeping afloat, maintaining speed, and delivering an accurate, maximum volume of fire. The dictum that a rapid and accurate volume of fire is the best protection from the enemy's guns is true; but a well organized ship-control party trained to circumvent every possible personnel or material injury in battle is not incompatible with this truth, but complementary.

It has been impossible in a publication of this kind to provide a standard drill for every ship or every weapon. Development is so rapid and consequent variations so great that this can not be done. Certain types have been selected and a standard method laid down. While it is not the department's policy to restrict initiative, these methods, having been fully tested by long experience should not be deviated from unless the change demonstrates a positive improvement when considered in all its aspects.

The chapter on "Explosives" is omitted as it is now covered in the Ordnance Manual, 1922, issued by the Bureau of Ordnance. No attempt has been made to include drills and exercises for a landing force, as they are set forth in the "Landing Force Manual, 1920."

PART I
ORGANIZATION

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ORGANIZATION.

COMPLEMENT.

101. Officers.—(1) The number of officers assigned each ship is designated by the Bureau of Navigation in two classes—the complement and the allowance.

(a) The “Complement” is the number of officers of each rank (line and staff) required to man the ship under all war conditions.

(b) The “Allowance” is the number of officers of each rank (line and staff) required to man the ship under certain peace-time conditions. As these conditions vary from time to time, and, as the available supply of commissioned personnel is subject to constant change, the “allowance” must never be used in the assignment of officers to battle stations.

(2) The duties and responsibilities of the individual officers are clearly set forth in the Navy Regulations, 1920.

102. Crew.—The foregoing remarks on the “Complement” and the “Allowance” apply also to the crew. The “Complement” should provide for sufficient men, in the proper ratings, to fulfill the requirements of—

- (1) The latest “Report of the Fire Control Board.”
- (2) The latest “Report of the Ship Control Board.”
- (3) Standing orders.

(4) Efficient service of the battery, operation of machinery, communications, manning repair stations and dressing stations, and the special ratings required to mess and supply officers and men under service conditions.

103. Subdivisions of the complement.—The complement of officers and men shall be organized into such divisions and crews as will be most conducive to the fighting efficiency of the ship, and upon this organization will be based all station bills for routine work. Fighting units, crews, and divisions will be so assigned to ship’s work as to be kept together and as near as possible to their battle stations. So far as practicable, the divisions and crews performing routine work will be commanded and directed in such work by the officers and petty officers who will control them in battle. For convenience of administration, divisions will be grouped under the appropriate department heads.

DEPARTMENTS AND DIVISIONS.

104. Gunnery department.—

I. The gun divisions (including marine division, and, on small ships, when desirable, a powder division).

II. The fire-control division.

III. The torpedo division.

I.

105. (1) Gun divisions.—

- (A) Main battery division.
- (B) T. D. battery division.
- (C) Antiaircraft division.

(2) *Numbering divisions.*—The crew of each turret will constitute a division, and these divisions will be numbered from forward aft. Torpedo defense battery divisions will be numbered from forward aft, following the main battery divisions. Antiaircraft division will follow torpedo defense division.

(3) *Numbering turrets.*—Turrets will be numbered from forward aft.

(4) *Numbering guns.*—Turret guns will be numbered serially from forward aft; right guns the lowest number in each turret. The right gun is the gun on the right-hand side of an observer standing in the turret officer's booth and facing toward the muzzle of the gun. Beginning with the lowest deck on which there are guns, torpedo defense guns will be numbered serially from forward aft, starboard guns being given odd numbers, port guns even numbers. If the foremost gun on the lowest deck is on the center line, that gun will be numbered "1" of its class. These guns will have separate series for each caliber. For antiaircraft guns it is considered that these guns should be numbered serially from forward aft, starboard guns having odd numbers, port guns even numbers. No difference in numbers should be made for difference in height of these guns.

Antiaircraft guns will be numbered according to the same rules as torpedo defense battery.

II.

106. Fire-control division.—The fire-control division shall comprise those officers and men detailed to fire-control stations. Men of other divisions, assigned for battle stations only, shall for routine administration duties be included in and muster with their respective divisions. The organization must provide for the station of selected, trained lookouts.

III.

107. Torpedo division.—The torpedo division comprises:

(1) *The torpedo crews* and men stationed to direct and control the torpedo fire.

(2) *The gunner's crew*, in charge of the gunner, comprising such men as may be detailed by the captain for the care, upkeep, and repair of ordnance material. The gunner performs these duties under the direct supervision of the gunnery officer.

(3) Torpedo tubes shall be numbered serially from forward aft, starboard tubes odd numbers, port tubes even numbers.

108. Navigation department.—

IV. The navigator's division.

IV.

109. Navigator's division.—

(1) The ship control crew.
(2) Communication control.
(a) The signal crew.
(b) The radio crew.

110. Engineering department.—

V. The main engines division.

VI. The boilers division.

VII. The auxiliaries division.

VIII. Electrical division.

V.

111. Main engines division.—Comprises those men having to do with the operation and maintenance of the main engines.

VI.

112. Boilers division.—Comprises those men having to do with the operation and maintenance of the boilers.

VII.

113. Auxiliaries division.—Comprises those men having to do with the operation and maintenance of the auxiliaries.

VIII.

114. Electrical division.—Comprises all men having to do with the maintenance and operation of electric machinery except the main drive and radio equipment.

115. Construction department.—

IX. The repair division.

IX.

116. Repair division.—

(1) The boatswain's crew, comprising the nucleus of the deck repair crew.

(2) The carpenter's crew, comprising the hull repair crews.

117. Medical Department.—

X. The surgeon's division.

X.

118. Surgeon's division.—The Hospital Corps force. Men of other divisions, assigned for battle stations only, shall for routine administration duties be included in and muster with their respective divisions.

119. Supply department.—

XI. The supply division.

XI.

120. Supply division.—

(1) Pay and G. S. K. crew comprises those men detailed for duty therein.

(2) Commissary crew comprises all men having to do with the commissary of the ship and including officers' messmen.

121. Numbering divisions.—Divisions shall be numbered in the following order:

- I. (A) Main battery divisions.
- I. (B) Torpedo-defense battery divisions.
- I. (C) Antiaircraft divisions.
- II. Fire-control division.
- III. Torpedo division (powder division).
- IV. Navigator's division.
- V. Main engines division.
- VI. Boilers division.
- VII. Auxiliaries division.
- VIII. Electrical division.
- IX. Repair division.
- X. Surgeon's division.
- XI. Supply division.

STATION BILLS.

122. (1) General provisions.—Every ship shall have comprehensive *watch*, *quarter*, and *station* bills showing the stations and duties of officers and men at clear ship, standing by for action and

action day and night, under different conditions, collision, fire, boats, landing force, cruising, fueling, cleaning and care of ship, and liberty. The *quarter bill* is the basis of ship organization and all other bills shall be derived from it. In its scope the quarter bill will embody the whole ship, and in its detail it will provide for every contingency of battle that can reasonably be foreseen.

(2) Every officer and man on reporting on board ship for duty should at once be assigned to his watch, quarter, and station billet. To provide for the security of the ship under all conditions that might arise, each department and division should be equally divided into sections or quarter watches; and each officer and man should be regularly assigned to one of these sections to the end that all stations, at all times, will be covered under all conditions of service.

(3) These bills shall be kept up to date and be in the possession of all officers. The division bill will be posted upon the division bulletin board. In smaller vessels, the complete ship bill shall be posted for the information of entire crew.

PART II

BATTLE DRILLS

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BATTLE DRILLS.

CLEAR SHIP.

GENERAL.

201. Preparedness.—It is the duty of the ship to take the initiative in maintaining a full allowance of fuel, ammunition, stores, and spare parts. It may become impossible to overcome defects and supply deficiencies when hostilities are impending. A ship, on leaving port, should at all times be prepared for action on short notice. Guns should be kept bore sighted. The stripping and clearing of the ship should mean only the accomplishment of details contributing to the offensive use of the armament and to the protection of personnel and material.

202. Thoroughness.—*Clear ship* is to be considered as an *evolution* in which *thoroughness* is the first consideration.

203. Two stages of clear ship.—Ships shall be cleared for battle as far as material is concerned in *two stages* under the following designations:

- I. *Strip ship.*
- II. *Clear ship for action.*

I. STRIP SHIP.

204. When done.—This shall be done when war is impending.

205. Material to be landed.—(*For drill and inspection the following material shall be tagged "Store." Boats may be anchored off*):

(1) Boats; except those designated by the commander in chief.
(2) Generally everything inflammable or liable to cause splinters that can be dispensed with.

(3) Stanchions and davits not needed. (Facilities for spreading certain awnings should be retained.)

(4) Unnecessary canopy frames.

(5) Unnecessary clothing of officers and men.

(6) Substitute windsails for ventilators where possible.

206. Protective preparations.—(*Need not be done for drill and inspection*):

(7) Rig wire splinter nets under engine room and fire room gratings.

(8) Rig splinter screens and mantlets.

207. Torpedoes.—(*Need not be done for drill and inspection*):

(9) Fit war heads.

II. CLEAR SHIP FOR ACTION.

208. The call.—The boatswain's pipe "All hands clear ship for action."

209. General duties.—(*For drill and inspection the following details need not be completed, but the ship's bill shall show in detail what should be done*):

- (1) Prepare for full power.
- (2) Stow in torpedo rooms detonators and dry primers for use in torpedoes. Others shall be stowed in safe compartments well below the water line.
- (3) Prepare to load torpedoes.
- (4) Release prisoners.
- (5) Throw overboard unnecessary inflammable oils, paints, and liquids.

(*For drill and inspection the following shall be done*):

(6) Rig light life lines which, if carried away, will not foul screws. Lay down and secure davits and stanchions. (The necessary short stanchions should be so fitted on rails and bridges that they can be kept shipped and not interfere with gunfire.)

- (7) Fill recoil cylinders.
- (8) Prepare dynamos, air compressors, and fire and bilge pumps for service, and start those necessary.
- (9) Connect up and test out all fire-control and ship-control communications and instruments.
- (10) Test out and prepare for action all firing circuits and air blasts.

(11) Connect up and test out fire hose. (Secure hose so as to be clear of blast of guns.)

(12) Rig all necessary blast screens. Secure searchlight against blast.

(13) Throw in battle circuits. Throw out all circuits not required for action.

- (14) Prepare auxiliary lighting arrangements.
- (15) Rig battle signal stations (radio and flag).
- (16) Rig repair station; prepare collision mat.
- (17) Rig dressing stations and prepare transportation for wounded.
- (18) Supply first aid packages.
- (19) Fill gun tubs.
- (20) Supply drinking water.
- (21) See in proper places necessary spare parts, and ordnance material.
- (22) Prepare auxiliary steering and ship-handling stations.
- (23) Shut steam not needed off all unprotected leads. Prepare to operate boiler stop and safety valves from outside boiler compartments.

(24) Wet down weather decks and plug scuppers. Put water in boats and lash canvas about them.

(25) See auxiliary gear for sustaining combat ready for use. Appliances for group or independent control of guns at hand. Ammunition supply and transportation gear rigged.

(26) Rig torpedo-firing director and test torpedo-firing circuit and special signals and lines of communication to torpedo room.

(27) Provide grapnels for clearing the screws.

(28) Secure anchors, unbend chains, and pay below. (While on soundings keep one chain bent.)

(29) Stow life preservers in convenient but protected places.

(30) Close the water-tight doors and hatches designated to be sealed during action. Close battle ports. At night screen lights. (Attention is called to the necessity for not interrupting the means of access or of communication to the various parts of the ship.)

(31) Unship and secure the ventilators and ladders that interfere with the battery.

(32) Stowage shall be assigned to the following, which will leave free passage for the ship's company and protection from gunfire:

(a) Navigational instruments.

(b) Coaling gear.

(c) Mess and galley gear.

(d) Sick bay mattresses not needed, bags, hammocks, ditty boxes, and cots.

(e) Gunnery training gear.

(f) Diving gear.

(g) Field guns.

(h) Wash deck gear.

(i) All other loose gear.

(33) Before battle men shall bathe and shift into clean underclothes.

(34) Supply ammunition.

(35) Have small arms and ammunition ready for serving out.

(36) Masthead the battle ensigns and make all final preparations for battle.

(37) Supply gas masks.

(38) Arrange for providing food and water.

QUARTER BILL.

210. Battle stations and reliefs.—

(1) Captain, conning tower; relief, executive.

(2) Executive, secondary ship control station; in direct communication with the captain.

(3) Gunnery officer, chief fire control (Groups I and II); relief, assistant fire-control officer.

(4) Navigating officer, primary ship-control station (Group III); relief, designated by the captain.

(5) Engineer officer, engine rooms (Group IV; relief, next in rank in the engineering department).

(6) First lieutenant, central station (Group V); relief, designated by the captain.

(7) Medical officer, primary dressing station (Group VI); relief, next in rank in the medical department.

(8) Supply officer, station and relief to be designated by the captain.

211. Battle organization.—The quarter bill shall show the grouping of officers and men with their stations and duties in the battle organization as follows, to carry out fleet doctrine and department's policy.

I.

212. Fire control.—

(1) Keeping gun range during the "approach."

(2) Under all conditions of battle:

(a) Successive stations.

(b) Direction and control on one target.

(c) Division and control on two targets on the same side.

(d) Division and control on two targets on opposite sides.

(e) Direction and control of torpedo defense battery on attacking destroyers during a day action.

(f) Independent turret control.

(g) On attacking destroyers at night.

(h) Antiaircraft control.

(3) Casualties and procedure.

(4) Secondary searchlight locations.

II.

213. Armament and ammunition.—

(1) Guns and torpedoes.

(2) Ammunition supply.

(3) Gun crews in reserve.

(4) Gun and torpedo casualties.

(5) Ordnance repair crew.

214. Communications—

(1) Bridge signals.

(2) Radio.

(Details to be provided for as covered in department's radio instructions.)

III.

215. Ship control—

- (1) Successive ship control stations.
- (2) Successive steering stations, methods of steering.
- (3) Interior communications.
- (4) Lookouts.

(Details to be provided for as covered in department's report.)

IV.

216. Motive machinery and auxiliaries—

- (1) Engines, boilers, and auxiliaries.
- (2) Casualties and procedure.
- (3) Engineer force in reserve.
- (4) Engineer repair crew.

V.

217. Repairs—

(1) Fire, collision, and damage from torpedo and shell fire in action.

- (2) Water-tight doors closed and those not to be closed.
- (3) Procedure in emergencies, such as fouling screws; masts, one or both, shot away; taking disabled ship in tow, etc.

(4) In case of damage to hull from collision, torpedo, or shell fire, the first lieutenant shall be prepared to take prompt action to right list and trim as provided in "Instructions for Battle Conditions" in Ships General Information Book.

(5) To be in readiness to act in case of damage to hull from collision, torpedo or shell fire, there should be men stationed in the water-tight subdivisions to report promptly on all damage, the location and nature; cause and extent of same, and to receive further instructions. In order to accomplish this, there shall be drilled and organized a system of patrols.

(6) There shall be provided in the central station an organization which shall cover all matters pertaining to the water-tight integrity; it shall include proper diagrams, charts, or models which can be used in connection with the recording of all casualties and the action taken thereon. The training and drills of personnel for keeping ships afloat on an even keel and for handling all hull casualties shall include a study of a water-tight subdivision model of the ship, constructed to scale and available for use and study by all officers and men.

(7) The repair crews will be available for fighting fires, operating valves, shoring bulkheads, stopping leaks, clearing wreckage, repairing electric leads, etc. Portables and tools will be supplied at the repair stations. Tools shall include wrenches, sledges, clamps, crowbars, tackles, shores, pipe cutters, gear for repairing electric

leads and apparatus, etc. Stowage at the repair stations should be provided for this gear. The repair crews shall include the rescue breathing apparatus details.

VI.

218. Aid to wounded—

- (1) Primary and secondary dressing stations.
- (2) Stretchermen details.
- (3) General instructions.¹
(a) First-aid appliances include shell wound dressings and tourniquets. Solutions for the smoke-inflamed eyes of the men at the guns, and dressings for burns and scalds in engine and fire rooms, plainly labeled, should be accessible to those stations.

(b) First-aid instruction comprises the following:

(1) Continuous first-aid service to the wounded during battle on the part of the personnel at large. The effectiveness of this service will depend largely upon the thoroughness with which the units have been previously instructed by the medical and division officers, as required under the regulations; and how well they have become imbued with the principle that first aid, calmly administered to themselves or by their comrades, represents the maximum service that can be rendered the wounded during the height of a naval action. The ship's force should have been warned that elaborate measures of treatment or extensive transportation during battle are both inadvisable and impracticable. The wounded man, after the administration of first aid, should be placed to one side, where his presence will be least felt and where he will not incommod or distract the fighting force.

(2) In a suspension or lull of battle when prompt treatment of the wounded at or near the battle stations is impossible, the stretchermen shall be required to seek out the wounded, to afford them relief, to transport them to the battle dressing stations and to prepare a list of the killed. It should be the first duty of the medical officer to give attention to those whose services can be restored. These men should be promptly returned to their stations. It must be borne in mind that the primary purpose of first aid is to keep as many effectives at their stations as possible. A graver class of injuries may require deliberate surgical intervention, but extensive procedures on the part of the ship's force are only legitimate if removal of the wounded from the ship is delayed. To assure the wounded early and efficient treatment, effect their rapid removal from the fighting ship and insure a continuous record of each case is the object of the organization.

¹ Prepared in the Bureau of Medicine and Surgery.

(c) (1) Routes to dressing stations should be indicated by an arrow and a red cross. There should be at least two dressing stations, a primary station and a secondary station. These stations should have an abundant supply of drinking water, all connections being behind armor. Storage tanks for drinking water should be provided, having a capacity sufficient to furnish, in first-class ships, 1 gallon of water per man, allowing for 20 per cent of wounded. Dressing stations should also be well ventilated, well lighted and as cool as the surroundings will permit. It has been estimated that for each 36 square feet of area, one cargo light of approximately 200 candle-power (six lamps) should be provided. Lanterns and electric bull's-eyes should be available in case the battle circuits suffer interruption. Electric or steam connections should be provided for the sterilizers. Sterilizers should be removed from the surgical operating room, and set up in the primary dressing station prior to action. There should be some provision made for the drainage of this space. In the vicinity of the dressing station or adjoining it, there should be arranged a berthing space for the wounded, sufficient to accommodate about 10 per cent of the complement. This space should be easy of access from the dressing station, and, like the latter, have an abundant air supply. In addition to the usual equipment transferred from the sick bay and operating room and distributed in the dressing stations, the following articles should be provided: Electric fans with proper connections, half tubs, water buckets, swabs and brooms, washing stands, tables for apparatus, shelves, supports or hooks for irrigators, etc., battle dressing lockers, bedding for the berthing space of the wounded, restoratives, etc. A reserve supply of surgical dressings should be available on this deck in a secondary station behind armor and accessible for distribution to the dressing stations.

(2) The station of the medical officer of the ship during battle shall be, as a rule, at the primary (operating) dressing station, where he shall see that the necessary equipment for operations and dressings is provided.

(d) Means of identification of the killed as required by Article XVII of the Tenth Hague Convention should be provided for each officer and man.

(e) The organization of the medical department, showing all dispositions under battle conditions, shall be worked out for the ship on going into commission. Provision shall be made for instruction of officers and men in first aid; for the equipment and organization of battle dressing stations as described above; and for a definite organization of the personnel of these stations, as well as for their progressive instruction in the methods of first aid and transportation.

(f) The galley and bakery in ships of old type, if intact, after an engagement should be placed at the disposition of the medical

officer for preparing additional hot water and dressings and for sterilizing instruments.

(g) Apparatus for transporting the wounded will be provided by the medical department of the ship. Simple measures designed to facilitate transporting the wounded by stretcher into boats or directly to the dressing stations by the most convenient hatch, down which they will be lowered or passed by hand to the deck below, are to be preferred to more elaborate means.

(h) A fighting ship should be cleared of wounded as soon as possible.

219. Training at battle stations.—The battle exercises are not to be regarded as periods of training so much as tests of the training. The above groups shall receive their battle training independently (see Bugle Calls, Pt. IX). Provision must be made for fully manning secondary battle stations for ship control and fire control, and for exercising control from those stations.

220. Standing by for action, and action.—The quarter bill must give the watches and dispositions covering the different degrees of preparedness required by existing orders.

221. Maintenance and routine.—Ships must be prepared for immediate action night or day for a long period during a war; and watches, details of duty, and dispositions must be arranged accordingly.

222. Final preparations for battle.—These shall be made when battle is *imminent*, or when standing by in *thick weather*, or *before sunset*. In daylight, the call to *general quarters* is the signal for final preparations. Circumstances will govern in the case of certain final preparations. At night the guns must be kept cleared and manned by the watch. The extent to which men off watch may turn in hammocks will depend on circumstances.

GENERAL QUARTERS.

223. Definition.—*General quarters* calls the ship's company to stations.

224. General duties.—

- (1) (a) Man battery and take battle stations.
- (b) Load torpedoes.
- (c) Connect fire hose.
- (d) Stand by manifolds and valves.
- (e) Stand by cut-out switches and switchboards.
- (f) Test out all gear.

(2) All those preparations and dispositions enumerated under *clear ship for action* which are necessary for the control and service of the battery shall be carried out to the extent necessary to use the battery.

(3) *Every officer and man* must occupy his battle station at general quarters. Fleet working parties, and ship's work and boating must give way to the general quarters routine.

225. The calls.—

- (1) Day action signals:
 - (a) General alarm.
 - (b) *General quarters* on the bugle (*call No. 29*).
 - (c) "General quarters" over interior communication system.
- (2) Secure signals:
 - (a) *Secure* on the bugle.
 - (b) "Secure" over the interior communication system.

226. Reports.—

- (1) "Ready." (To be made over fire-control and interior communication systems.)
 - (a) Gun divisions, fire-control division, and torpedo division report to chief fire control.
 - (b) Ship control, radio, and signal crews report to navigating officer.
 - (c) Engineering department, medical department, and repair crews report to central station.
 - (d) Chief fire control, navigating officer, and central station report to executive.
 - (e) Executive report to captain.
- (2) "Secure."
 - (a) Heads of departments report to executive.
 - (b) Executive report to captain.

227. The exercise.—(1) Thorough preparation shall be made for every general quarters exercise, and a definite program shall be drawn up and followed at this drill, during which casualties shall be simulated.

(2) The training of units of the battle organization and gun crews should not be attempted at general quarters except to simulate casualties to personnel and material. Gun crews and other units are expected to be expert before the ship goes into action, and they should be brought to thorough proficiency before seriously taking up the problems of general quarters.

(3) The action taken on each casualty shall be investigated. Casualties shall be given in such manner and at such time as to closely approximate a real casualty. The patrol and communication system of the ship must be used in all lower deck casualty drills, to determine, first, that there is a casualty; second, to insure a prompt, accurate report to central; and, third, that the proper action is taken to handle the casualty. Great thought and care must be exercised to introduce all possible conditions which exist with each casualty. For example, a shell bursting on second deck. All the probable damages due to the burst should be simulated.

GAS DEFENSE.

228. All vessels should provide in organization for the details and necessary action to be taken to safeguard personnel from explosive or poisonous gases. A standard form of signal for gas alarm should be installed and used for no other purpose. At this alarm all personnel should put on gas masks in accordance with instructions which may be issued from time to time by the department. These masks should be stowed in such a place that they may be manned quickly and yet be free from the destructive effects of shell burst.

Necessary measures must be provided for to prevent the inflow of gases to the vitals of the ship through the ventilating system. Under present conditions all compartments below must receive adequate notice of gas and immediately use gas masks.

At least once a month there should be periodical instruction given to the personnel regarding gas, the different kinds of gas, how detected, the dangers of same, and the best thing to do under all circumstances. Inasmuch as there are possibilities of using gas bombs from aerial planes, it is of equal importance to provide for the gas protection of all gunnery personnel stationed in the tops, conning tower, or upper decks. Inasmuch as such personnel can best observe the enemy's shell bursts, it is recommended that specially trained lookouts be designated to observe gas shells and report when the gas alarm should be sounded. As it is well known in the World War the gas alarm in the trenches had to be obeyed instantly; and in some cases where mustard gas was used at the beginning, too little heed was paid to protect against this method of warfare. Therefore in case of doubt it is best to sound the gas alarm and all hands wear gas masks. The work of the personnel in peace-time training should be carried on and rehearsed under conditions simulating a gas attack.

PART III

EMERGENCY DRILLS

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EMERGENCY DRILLS.

EMERGENCIES IN GENERAL.

301. Definitions.—Emergency drills include collision drill, fire drill, abandon ship drill, and rescue drill.

302. Emergency signal.—For all emergency drills the *general alarm* shall be sounded before the distinguishing call for the drill. Emergency signals and calls shall not be used for any other purpose than those specified. If emergency signals are sounded inadvertently, the officer of the deck shall, without delay, sound the "secure."

303. Officer of the deck.—In all emergencies the officer of the deck shall sound the proper alarm and take the steps necessary to insure the safety of the ship and of the personnel, and shall inform the captain and the executive of the situation.

304. Arms.—Officers shall wear pistol in service belt and carry ammunition.

305. Silence.—On all occasions of emergency silence is the first requisite of discipline. Unnecessary noise of any kind makes for confusion. Those in authority are the only ones whose voices should be heard.

306. Stations.—Every officer and man shall go to his station at once. Those men who have no specific duties shall fall in at quarters and keep silence.

307. Details.—In each division stations and duties should be assigned on the basis of the watch bill, by squads of the sections. The organization shall provide for all conditions such as lying in port with one-half or more officers and men away from the ship. It is specially important in dry dock or at a dock to be thoroughly prepared to act on an alarm of fire either aboard ship, ship's boats, or in the navy yard. The squad leaders are responsible for the duty assigned to the squad, and shall be made responsible to the petty officer in charge of the section. Petty officers in charge of sections are responsible to the petty officer in charge of the watch. The petty officers in charge of the starboard and port watches are responsible to the division officer. Squads are the convenient subdivisions of a section as designated by the division officer. Assignment of duties must provide for the most serious circumstances.

308. Calling officers at night.—Provision shall be made for calling officers and special details at night.

309. Communications.—Central should always be informed of the location or character of an injury or emergency, or of the purpose

of the exercise, and should transmit the information to the engine room and to other stations. For collision and fire drills, the ship's interior communication system shall be used for the "ready" report which report shall be transmitted also by messenger.

310. Secure.—*Bugle call No. 10.*—After *secure*, all hands, except those on watch, shall fall in and remain at quarters until "retreat." The report "secure" shall be made in person by the senior present of each division.

311. Retreat.—*Bugle call No. 12.*—*Retreat* shall not be sounded until all divisions have reported *secure*.

312. Hammocks clear of passages.—Those men whose hammocks are billeted in gangways will each take one turn of the lashing around the belly of his hammock and sling it clear of the passageway. The billets, which come under this category, should be specially designated by the division officer, and so marked.

313. Personnel casualties.—Personnel casualties should be prepared for and simulated at all emergency drills. The members of the *band* should be permanently detailed as stretchermen. At emergency drills they shall assemble, under the command of the medical officer, to answer calls to transport the sick or injured. The medical officer is responsible for the detailed instruction of the stretchermen. (See call No. 46.)

314. Pilot ladders, fenders, and boat spars.—Every ship should provide herself with fenders, and pilot ladders with flat tread ready to be dropped over the side when manning boats. Boat spars should be stowed and fitted so that they can be struck into the boats before the boats are lowered.

WATER-TIGHT INTEGRITY.

315. General rule.—The doors, hatches, and manholes giving access to all compartments must, when closed, be securely dogged to insure water-tightness. Double-bottom manhole covers should be kept securely dogged at all times except as necessary for access for inspection, cleaning, painting; they should never be left open overnight or when men are not actually engaged in work.

316. Organization for.—The organization must provide for closing those water-tight doors, hatches, and ventilator openings which are designated to be closed during maneuvers, in fog, or as a matter of routine at night.

317. The calls.—

- (a) "Water-tight doors" on the bugle (call No. 23).
- (b) The warning howlers.

318. Closing power-operated doors.—Following the warning howlers, the power-operated doors must invariably be closed from the bridge.

319. Duties.—The doors, hatches, and ventilator openings which are designated to be closed by the divisions or department shall be reported as closed to the officer of the deck by the senior petty officers. The report from the engineering department shall be made over the interior communication system by the officer or petty officer of the watch.

320. Responsibility.—Division officers are responsible for the water-tight integrity of their parts of the ship. The officer of the deck when all reports have been received shall report "All closed" to the executive officer.

321. Closing ventilator openings.—In each compartment the water-tight covers to ventilator openings and the valves at bulkheads are to be closed and the fact that they are closed shall be included in the reports made by division officers.

(a) *Reports.*—Reported closed by division officer and the report from engineering department by engineer officer of the watch.

(b) *Responsibility.*—The first lieutenant and division officers are responsible for the water-tight integrity of their parts of the ships. The officer of the deck, when all reports have been received, shall report "All closed" to the executive officer. Frequent inspections shall be made to check water-tight integrity system. The first lieutenant and executive will be held responsible to the captain for its efficiency. The department desires to emphasize the extreme importance of these duties.

322. Remarks.—Doors and hatches when closed for drill or in emergency are not to be opened without permission of the officer of the deck. Doors and hatches shall be opened only when the word is passed "Open doors and hatches" and by call on bugle.

COLLISION.

323. At anchor.—The officer of the deck shall be prepared to veer, to rig in the booms, and to clear the side as far as practicable.

324. The calls—

(1) Emergency signals:

(a) General alarm.

(b) One long blast of the siren.

(c) The warning howlers.

(d) Word passed by boatswain's mate as to location of the injury.

(e) The assembly on the bugle. (Call No. 8.)

(2) Secure signals:

(a) Three blasts on the siren.

(b) Secure on the bugle.

(c) "Secure" by boatswain's mate.

(d) "Secure" over interior communications system.

325. Officers' stations and duties—

- (1) Executive in general charge.
- (2) Gunnery officer shall take immediate charge of the placing of the collision mat, and exercise supervision over the divers.
- (3) Navigating officer shall inform himself of the course and distance to the nearest shore, be prepared to serve out charts of navigating outfits, and relieve the deck.
- (4) Engineer officer shall see that the pumps are started and are put on flooded compartments or on the drainage system; and shall keep the executive informed as to the condition of all compartments within the limits of his department.

(5) First lieutenant shall aid the executive, assist in localizing the damage and assure himself that the valves and arrangements outside the engineer's department permit the pumping of damaged compartments.

(6) Medical officer, at the sick bay, shall make preliminary provision for removal of sick; and shall be prepared to receive injured or to dispatch a first-aid party.

(7) Supply officer shall be prepared to supply storeroom keys, and shall make preliminary provision for saving public money and records.

326. General duties.—

- (1) Close water-tight doors and fall in at quarters.
- (2) Prepare the collision mat; get it over if ordered.
- (3) Pump out all flooded compartments.
- (4) Localize the flooding as much as possible by closing valves and shoring bulkheads.
- (5) Rig and man diving outfit, and prepare to get diver over the side.
- (6) Man lifeboats. Prepare to lower all other boats. Be prepared to rescue or render assistance.
- (7) Release prisoners.
- (8) Prepare to remove sick.
- (9) If at anchor, prepare to get under way.
- (10) At night man searchlights.
- (11) Prepare leak stoppers for use.
- (12) Be ready to take measures to keep ship on even keel, such as shifting oil, stores, or flooding compartments if necessary.
- (13) Man necessary valves to pump out compartments with air-water ejection system.

327. Detailed duties.—Doors, hatches, and valves should be grouped, and groups assigned to squads. At drill it is important to require every "dog" to be secured, and defects which prevent the efficient closing of doors, hatches, or valves to be reported to the division officer at once. These defects shall be immediately remedied.

328. Escapes.—The collision bill shall indicate the escapes to the upper deck. Care shall be exercised that no man is sealed up in a compartment.

329. Collision, or underwater damage, at general quarters.—No emergency signal shall be made. The senior present in the endangered locality, using men available and the assisting repair crew, will localize the damage.

FIRE.

330. General instructions.—Any person discovering fire aboard ship will endeavor to extinguish it, or prevent the spread of flames. Use will be made of fire extinguishers and other special appliances immediately available. Word shall be sent at once to the officer of the deck.

331. The calls.—

(1) Emergency signals:

(a) General alarm.

(b) Ship's bell rung rapidly, followed by designating number of strokes to indicate location.

(c) *Fire quarters* on the bugle (call No. 31) followed by the same number of blasts to indicate location.

(d) Word passed by boatswain's mate as to location of the fire.

(2) Secure signals:

(a) *Secure* on the bugle.

(b) "Secure" by boatswain's mate.

(c) "Secure" over interior communication system.

332. Officers' stations and duties.—

(1) Executive at scene of fire in charge.

(2) Gunnery officer shall have men stationed at flood cocks and sprinkler valves; be prepared to flood threatened magazines or shell rooms; have dry primers and detonators removed from vicinity of fire.

(3) Navigating officer shall relieve the deck.

(4) Engineer officer, engine room. He shall have an officer stationed at the steam fire extinguishing manifold; and at the chemical extinguishing valve, if the fire is in a compartment so piped.

(5) First lieutenant shall aid the executive.

(6) Medical officer at the sick bay shall make preliminary provision for removal of sick; and shall be prepared to receive injured or to dispatch a first-aid party.

(7) Supply officer shall assure himself that storeroom keys are supplied; and make preliminary provision for saving public money and records.

333. Special details.—The following special details shall assemble well clear, but near the scene of the fire, under the command of the carpenter:

- (1) Repair crew, with tools.
- (2) Fire-extinguisher details.
- (3) Rescue breathing-apparatus details.

334. General duties.—

(1) Connect up and lead out hose to all fire plugs in vicinity of fire. Divisions that are remote from the fire will use their hose to extend other lines.

- (2) Put pumps on fire main.
- (3) Serve out flood cock, magazine, and storeroom keys.
- (4) Flood magazines and shell rooms, if necessary.
- (5) Remove explosives, gasoline, oils, and other inflammable material from vicinity of fire.

(6) Close air ports, doors, and hatches where necessary. Care should be taken not to cut off or close unnecessarily the passages and hatches used for access and for communication.

- (7) Men having charge of storerooms will stand by them with keys.

(8) Stop blowers or close valves in air ducts where they supply air to the fire.

(9) Be prepared to light up vicinity of fire with portables, lanterns, or electric "bull's-eyes."

- (10) If alongside a dock or other vessel, prepare to cast off.

- (11) If at anchor, prepare to weigh or slip.

- (12) Remove sick and prisoners to place of safety.

335. Testing equipment.—All fire-extinguishing apparatus and equipment shall be tested at routine times to insure its efficiency.

336. Care of particular compartments.—Attention is called to the Bureau of Engineering Manual as to the care to be observed with coal, fuel oils, gasoline, and kerosene on board ship. Coal bunkers, paint lockers, storerooms, and compartments where fires are most apt to occur should be kept under careful surveillance.

337. Fire extinguishers.—(1) Each vessel (except submarines) is furnished with two $2\frac{1}{2}$ -gallon acid-soda nonslop type extinguishers for use of the fire and rescue party. In general, carbon tetrachloride extinguishers are also furnished for the protection of important electrical apparatus. Two should be located in dynamo rooms or machinery compartments where dynamos are installed, radio rooms, distribution rooms, central stations, interior communication rooms, and battery charging rooms on ships in general, and the main machinery rooms of electric driven ships. Also for protection against leaking fuel oil. Two in each oil-burning fireroom, two immediately outside the paint and oil rooms, galleys, and bakeries using oil-burning ranges or bake ovens.

(2) Oil-burning and fuel-oil carrying ships are furnished with special fire extinguishers, for fighting fuel-oil fires, as follows:

(a) CO₂ apparatus, permanently installed, piped to compartments in which fuel-oil leaks might occur and to paint-mixing rooms.

(b) Foam type apparatus, permanently installed in the firerooms of oil-burning vessels.

(3) Each submarine is furnished with not less than six portable carbon tetrachloride type extinguishers.

(4) Each gasoline motor boat is furnished with—

(a) Bucket or box of dry sand.

(b) Two carbon tetrachloride type extinguishers located in the engine compartment.

(c) Two acid-soda nonslop type extinguishers located outside of engine compartment (to be used only in case the small carbon tetrachloride extinguishers fail to cope with the fire).

(5) Instructions for testing and the use of extinguishers are furnished with each.

(6) The CO₂ apparatus acts by smothering the fire with CO₂ gas, and is operated from a manifold at a distance from the fire.

(7) The foam type extinguishers act by releasing a heavy foam which smothers an oil, gasoline, or other fire by spreading over the surface and excluding the air. It is operated by a valve and hose in the fireroom in which it is installed.

(8) The carbon tetrachloride type is of particular value on a fire of electric origin, because the liquid thrown on the fire is a non-conductor. This type is usually fitted with a hand pump.

338. Rescue breathing apparatus.—The saving of life may depend on the ability to send men into compartments filled with irrespirable gas. The possibility also exists that the safety of the vessel may likewise so depend. For this contingency rescue breathing apparatus is supplied to vessels. Intelligent men should be drilled in the care and operation of this apparatus and should be able to find their way into any compartment to locate the flood cocks and to work despite the presence of noxious gases. These details should be composed of members of the repair party who would always be available in action.

339. Fire at general quarters.—Will be fought by the officer and men at the scene of the fire. As far as practicable, the fire of engaged guns must not be interrupted. Effort must be directed to prevent the spread of flames, to remove spare ammunition to a safe distance, to divert chains of ammunition passers passing too close to the fire, and to isolate endangered magazines, flooding them if necessary.

ABANDON SHIP.

340. General requirements of the bill.—The bill shall provide for:

I.

Getting boats out and manning them as quickly as possible, providing nothing but a life jacket for each man; as, when in company, other ships may be depended on for assistance.

II.

Provisioning, equipping, and manning boats; as when acting singly.

III.

An alternative method to be used when it is found impracticable to get out boats and rafts, due to list of ship, lack of time, or other compelling reasons.

IV.

The organization should provide for:

- (1) Making two or more trips with the boats.
- (2) Varying the capacity of each type of boat below maximum allowed, regulated by the sea condition.
- (3) Reduced number of boats available due to accident or other conditions.
- (4) Periodical inspection of life belts.

341. The calls.—

- (1) Emergency signals:

FOR I.

- (a) General alarm.
- (b) *Abandon ship* on the bugle (Call No. 30), followed by *double time* on the bugle (Call No. 71).
- (c) The boatswain's pipe "All hands abandon ship."

FOR II.

- (a) General alarm.
- (b) *Provisions* on the bugle (Call No. 18), followed by *abandon ship* on the bugle (Call No. 30).
- (c) The boatswain's pipe "All hands provide and equip for abandon ship."
- (2) Secure signals:

- (a) *Secure on the bugle.*
- (b) "Secure" by boatswain's mate.
- (c) "Secure" over interior communication system.

342. Stations and duties.—

- (1) Executive in general charge.
- (2) Gunnery officer and (5) first lieutenant shall take immediate charge of embarkation, each on one side of the ship.
- (3) Navigating officer shall relieve the deck, prepared to give the course and distance to land.
- (4) Engineer officer and his assistants repair to their stations in engine and firerooms. All petty officers of the engineer department take steaming stations, relieving as many of the nonrated men as possible.
- (5) First lieutenant (see (2)).
- (6) Medical officer shall supervise the transportation of the sick and injured to the first crews.
- (7) Supply officer shall save the public money and accounts.
- (8) The ship's company shall be detailed into first crews and second crews.
- (9) Of the officers, generally, the juniors should be detailed to the first crews; the seniors should be detailed to the second crews. Of the men, the junior ratings should generally be detailed to the first crews. Each crew should have sufficient experienced men of the seaman branch to insure proper handling of the boat.
- (10) Provide every man and officer with a life jacket.
- (11) Second crews shall assemble clear of the boats on the bridges and the superstructures.
- (12) First crews shall assemble adjacent to boats.
- (13) The deck petty officers of the second crews shall assist in getting out of the boats for the first crews.
- (14) The prisoners shall be released.
- (15) At the proper time, notification shall be sent to officers and men below, who then secure boilers and machinery and join the second crews.
- (16) Reasonable provision shall be made looking to saving logs, records and muster rolls. Confidential books and papers *must* be saved or destroyed.

343. Boat capacities and allowances.

Boat name.	Carrying capacity.	Abandon ship water, battleships, battle cruisers, and armored cruisers ($\frac{1}{2}$ gallon per man).	Abandon ship water, all other ships ($1\frac{1}{2}$ gallons per man).	Breakers belonging to boat.	Additional 8-gallon breakers for abandon ship (except for B. S., B. C. and A. C.).
	<i>Men.</i>	<i>Gallons.</i>	<i>Gallons.</i>		
50-foot steamer.....	44	22	66	{ 2 8-gallon. 1 5-gallon. }	6
40-foot steamer.....	29	15	44	2 8-gallon.	4
30-foot steamer.....	25	13	38	{ 1 8-gallon. 1 5-gallon. }	3
40-foot motor barge.....	37	16	-----	2 8-gallon.	5
50-foot motor boat.....	50	25	75	4 8-gallon.	5
35-foot motor boat.....	27	14	41	2 8-gallon.	3
26-foot motor boat.....	18	9	27	2 5-gallon.	2
21-foot motor dory.....	10	5	15	1 5-gallon.	1
50-foot motor sailing launch.....	190	95	285	12 8-gallon.	23
40-foot motor sailing launch.....	90	45	135	6 8-gallon.	11
36-foot motor sailing launch.....	70	35	105	5 8-gallon.	8
33-foot motor sailing launch.....	50	25	75	4 8-gallon.	5
30-foot motor sailing launch.....	40	20	60	3 8-gallon.	5
24-foot motor sailing launch.....	19	10	29	2 5-gallon.	2
31-foot racing cutter.....	18	9	27	1 8-gallon.	3
28-foot cutter.....	33	17	50	2 8-gallon.	4
26-foot cutter.....	27	14	41	{ 1 8-gallon. 1 5-gallon. }	3
24-foot cutter.....	19	10	29	2 5-gallon.	2
30-foot whaleboat.....	40	20	60	{ 2 8-gallon. 1 5-gallon. }	5
28-foot whaleboat.....	32	16	48	2 8-gallon.	4
24-foot whaleboat.....	23	12	35	{ 1 8-gallon. 1 5-gallon. }	3
20-foot whaleboat.....	16	8	24	2 5-gallon.	2
20-foot dinghy.....	14	7	21	2 5-gallon.	1
16-foot dinghy.....	10	5	15	1 5-gallon.	1
17-foot dory.....	5	3	8	1 3-gallon.	1
14-foot wherry.....	5	3	8	1 3-gallon.	1
12-foot wherry.....	4	2	6	1 3-gallon.	1

NOTE.—Extra water breakers for abandon ship not required for battleships, battle cruisers, and armored cruisers.

The maximum number of men indicated on the label plate of a boat should not be exceeded under any circumstances and should be reduced by the officer in charge when conditions are such as to indicate that the maximum number of men can not be carried with safety.

(c) As there are in some types of boats different designs of the same boat in service, and as new designs are developed from time to time, the capacity shown on a boat's label plate should be taken as authoritative where it differs from the capacity given in the foregoing table.

344. Additional for provisioning and equipping.—

- (1) Officers provide binoculars and *the Deck and Boat Book*.
- (2) The assistant navigator take chart and navigation gear.
- (3) The signal officer take rockets, pistol and signal stars.
- (4) The first crews shall be provided with provisions and equipment as per "The Boat Book of the United States Navy 1920," and, in addition, four buckets for bailing.

345. Return of boats.—The boats will be brought back by details from the first crews to take off the second crews, and make other trips as required.

FIRE AND RESCUE.

346. Employment.—The fire and rescue party may be called to assist a vessel on fire; to prevent the spread of flames to shipping; to render assistance on shore or to rescue people from a vessel in distress. As the particular emergency can not be foretold, the entire equipment specified should always be provided. Boats should be commanded by the regular boat officers.

347. The calls.—

- (1) Emergency signals:
 - (a) General alarm.
 - (b) *Assembly* on the bugle (Call No. 8).
 - (c) The boatswain's pipe "Away fire and rescue party."
- (2) Secure signals:
 - (a) *Secure* on the bugle.
 - (b) "Secure" by boatswain's mate.
 - (c) "Secure" over interior communication system.

348. Organization.—

I. *The rescue detail.*

II. *The fire detail.*

III. *The relief detail.*

I.

349. The rescue detail.—

(1) *Boats and organization.—*To be taken from the division or divisions that man the *specified boats*; each of those divisions to have a complete organization in each watch. A medical officer,

with outfit, to stand by to go with this detail. In addition to the regular equipment each boat will take:

- (a) One life jacket for each officer and man in the boat.
- (b) One ring life buoy fitted with hauling line.
- (c) One hand grapnel on a line.

In port a steamer or power boat should be used if immediately available.

II.

350. The fire detail.—

(1) *Boats and organization.*—The boats designated should be those which are quickly hoisted out, adequate, and have motive power. Each watch of the divisions from which the fire details are drawn should contain a complete fire detail, so that with men on liberty, the organization can handle the emergency. The necessary artificers should be similarly detailed.

(2) *Equipment.*—Each boat should carry its regular equipment excepting spars. The special equipment should be provided by an adjacent division, leaving the fire detail free to man their boats.

(A) The *first boat* to go out should carry:

- (a) Boat officer and crew.
- (b) Artificer with unshackling kit.
- (c) Rescue breathing apparatus detail.
- (d) One life jacket for each officer and man in the boat.
- (e) One ring life buoy fitted with hauling line.
- (f) Two hand lanterns.
- (g) Two foam type extinguishers.
- (h) Six buckets.
- (i) Fire party chest, containing:
 - (1) Two axes.
 - (2) One crowbar.
 - (3) Two grapnels fitted with chain and rope lanyards.
 - (4) Two heaving lines.
 - (5) Six bucket lanyards.
 - (6) Two cold chisels.
 - (7) Two ball and peen hammers.
 - (8) One maul.
 - (9) One Stillson wrench.

(B) The *second boat* to go out should carry:

- (a) Boat officer and crew.
- (b) Carpenter or mate.
- (c) Handy-billy pump crew.
- (d) One life jacket for each officer and man in the boat
- (e) One ring life buoy fitted with hauling line.
- (f) Two hand lanterns.

- (g) One handy-billy pump.
- (h) Two lengths of suction hose with strainer.
- (i) Three lengths of fire hose.
- (j) One nozzle.
- (k) One spanner.
- (l) One reducer.
- (m) One jigger and two straps.
- (n) One 5-inch line.

III.

351. The relief detail—

- (1) *Employment*—
 - (a) To relieve or to augment the fire and rescue details.
 - (b) To be armed for shore duty to assist the local authorities in preserving order and protecting property.
 - (c) To respond to the local fire regulations at a navy yard.
 - (d) To man additional boats for rescue duty.
- (2) *Organization*.—It should be organized for each watch from a division or divisions not furnishing the rescue or fire details.

PART IV

GUN DRILLS

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GUN DRILLS.

GENERAL NOTES.

401. Instructors.—The duty of a drill officer or an instructor is to impart to the crew a sound knowledge of the gun, mount, and drill. Practical results are sought. The first requisite is to get the framework of the instruction into the crew's minds, then the details can gradually be built up. The crew should always understand why each detail of the drill is necessary. A rapid and accurate fire is required; this being thoroughly understood by the green crew, special drills to develop the fine points of loading, sight setting, and pointing are in order. All explanations and instructions should be made as clear, concise, and emphatic as possible. When practicable, written drill instructions should be posted at each gun or in each turret. When the crew is drilling as a unit the instructor should command "Silence" when he corrects a mistake, in order that the whole crew may have their attention drawn to it.

402. Assignment of stations.—The members of the gun crew are assigned to stations. The titles of the stations are, in a general way, explicative of the duties to be performed.

403. Falling in for muster.—Crews of broadside guns, when falling in for muster abreast the guns, should fall in, in single rank, facing inboard, by size, gun captain on the right.

404. Manner of giving commands.—Officers and instructors must be careful to give commands in a clear and distinct manner.

405. Commands used.—The following commands are used:

- (1) Stations!
- (2) Load!
- (3) Commence Firing!
- (4) Silence!
- (5) Carry on!
- (6) Cease Firing!
- (7) Unload!
- (8) Secure!

(1) *Stations!*—At this command, which may be given at any time or in any formation, the crew go at once to their gun, take their respective stations, and await further commands. The gun is supposed to be ready for the exercise required when this command is given.

(2) *Load!*—The crew, being at their stations, go through the operation of loading the gun.

(3) *Commence Firing!*—This command may be given either before or after the gun is loaded. If given before, the gun will be loaded at once. The target having been designated, the firing and service of the gun are started, the pointer firing when the firing signal is given or when on the target, depending upon the nature of the practice being held. The gun will be loaded as soon as fired, and firing will continue until the ammunition is exhausted or until the command "Cease Firing!"

(4) *Silence!*—This command is given when, for any reason, it is necessary to temporarily stop the service of the gun. It may be given by the division officer or by any member of the crew noticing something requiring immediate attention. When it is given, every member of the crew ceases all operations and stands in his tracks and awaits instructions. If a member of the crew calls "Silence!" he will point out to the division officer or gun captain, what he has observed.

(5) *Carry on!*—After the command "Silence!" the defect having been remedied, this command is given, at which the crew resume the operation in which they were engaged when the command "Silence!" was given.

(6) *Cease Firing!*—The service of the gun is stopped and steps are taken so that the gun can not be fired. The procedure will depend upon the type of gun, and for this purpose guns may be divided into two classes:

(a) Bag guns (guns using powder in bags and separate primers in locks). Break firing circuit at contact lug and remove primer from lock.

(b) Case guns (guns using powder in brass case containing the primer):

I. If charge and projectile are separate, remove the case and close breech.

II. If the charge and projectile are in same case, remove case, i. e., unload.

(7) *Unload!*—(a) If the gun will permit, the primer must be removed before the plug is opened. If this is done, the powder may be removed without fear of accident. With case guns the plug should be opened cautiously.

(b) When it is apparent that the service of the gun will not be resumed within a reasonable time, the powder which has been unloaded must be dumped into distilled water, except as provided for in United States Navy Regulations.

(8) *Secure!*—(a) At this command the ammunition will be returned to the magazine; spare parts returned to their places; unnecessary gear stowed away and guns and turrets secured.

(b) If the gun has been fired, as soon as possible after the firing has ceased, the gun should be thoroughly washed out, dried and oiled. If practicable, this should be done while the gun is still hot.

406. Preparing the battery for exercise—

(1) At "Clear Ship for Action" the guns are prepared without further command and many preparations made which, at general quarters for exercise, are omitted. (See Clear Ship for Action Pt. II.) The following list of preparations, when clearing for action, is not complete, but is given as a guide:

(a) Open hood shutters and provide material for wiping off sight lenses.

(b) Examine training and elevating gear, including motors, to be sure they are in good working order.

(c) Test all the fire-control apparatus.

(d) Test fire extinguishing system.

(e) Take out tompions.

(f) Cast loose and see that all ventilators, stanchions, and hatches clear for training turrets.

(g) Provide sponges, buckets, gun tubs, and powder drowning tanks and fill with water.

(h) Supply spare parts and accessories.

(i) Provide tools that might be necessary in case of breakdown.

(j) Connect up firing circuit and test if for grounds and faulty connections. Fire primers with both battery and motor generator. Try percussion firing.

(k) Examine breech and firing mechanism parts.

(l) Have spare gas check pad ready.

(m) Inspect and test gas ejector system.

(n) Examine powder bags and shell, if time permits.

(o) Provide loading tray and hand rammer.

(p) Provide first-aid outfit.

(2) When the ship is not cleared for action, at the *call to general quarters*, the crew will immediately go to their stations and prepare for the *exercise* of the *gun crew*. For example, as the crew should be exercised at "fire in action," the fire hose should be led out; as the guns must be trained, all ship gear that interferes therewith must be removed. Duties which are performed at "Clear ship for action" and which do not affect the *drill of the crew* will not be performed when at general quarters for exercise.

(a) Spare parts, kept in the storeroom, will not be provided, but will be gotten up from the storeroom when needed during the drill.

(b) Telescope sights, if not on the gun, should be kept in boxes close to the gun and should be shipped at general quarters.

(c) When at general quarters for exercise, guns will not be provided with service ammunition. In order to test the ammunition hoists of broadside guns the following dummy charges should be prepared:

For each broadside gun of 5-inch caliber or above, two charges.
For each gun below 5-inch caliber, one box.

These should be sent to the guns at general quarters for exercise.

(d) Gun swabs, bristle-bore and marine sponges, gun tubs and buckets, as allowed by the Bureau of Ordnance, should be provided at the guns at general quarters.

(e) Firing circuits need not be put on the guns unless drill primers are to be fired.

(f) Tampions must be removed.

407. Details for providing.—The detailing of the members of the crew for the performance of the individual duties in getting the battery ready is left to the discretion of the division officer whose duty it is to see that his battery is ready, in all respects, as expeditiously as possible for the drill or exercise that is to be carried out.

408. Division officers responsible.—Division officers, being responsible, must assure themselves either by personal inspection or through reports from their gun captains, that their battery is, in all respects, ready for the exercise required before reporting ready to the fire control officer. "Check-off lists" should be used.

409. Casualties to material.—(1) *Casualty drills.*—The attention of all officers is called to the absolute necessity of drilling the gun crews at *casualty drills*—i. e., casualties to both men and material. No matter how efficient the crew may be at loading, sooner or later a breakdown or interruption may occur. Then it is of vital importance that the crew be prepared to remedy the defect in the shortest possible time, in order that the services of the gun may not be lost to the ship. To this end officers must not only explain to the crews what to do in case of any probable casualty, but must *actually drill them in doing it*. To neglect this is fatal.

(2) *List of casualties.*—Study reports of target practice and see what has happened to others; make notes of what happens during drill. Any of these things may happen during practice. The following is a brief list of the most frequent casualties, but does not, by any means, include all that may occur:

- (a) Broken rammer.
- (b) Broken powder bag.
- (c) Burning fragments on mush room or in powder chamber.
- (d) Circuit breaker blows.
- (e) Fire in turret or in vicinity of broadside gun.
- (f) Firing circuit cut or jarred loose.
- (g) Gas ejector fails.
- (h) Hoist cable carries away.
- (i) Lights out.
- (j) Misfires.
- (k) Plug will not open or will not close.
- (l) Powder bag comes wrong end toward gun.
- (m) Shell does not seat.

- (n) Signal system (if used) fails.
- (o) Vent becomes choked.
- (p) Primer blow back fusing the metal of primer case or the firing pin.

410. Casualties to personnel.—(1) *Casualty drills.*—In case of injury to any member or members of the crew, the gun crew must be drilled so that those remaining will continue the service of the gun. It is to be expected that, in this case, the service will not be as efficient as before the casualty; but it must be distinctly understood that no gun is to be abandoned, even by the last remaining man, as long as it can be loaded and fired. For the above reason every man in a well-trained gun crew should be familiar with the duties of every other station, and should be prepared to perform them without hesitation.

(2) *Removal of personnel casualties.*—The removal of casualties is a matter to be specially provided for in each ship. It is the duty of the gun crew to continue the service of the gun and to overcome every obstacle which interferes therewith. The gun crew will therefore not cease their operations of loading, but two men nearest to the wounded man should, without orders, place him in any convenient position clear of the working of the gun, whence he will be given first-aid treatment, then removed, as elsewhere specified. The operations of loading or firing will never be discontinued for the purpose of removing personnel casualties, except in cases of absolute necessity.

NOTES ON SIGHT SETTING.

411. Necessity for accuracy.—The proper setting of the sights of a gun is absolutely essential to accuracy of fire. No matter how efficient the rest of the crew may be, the accuracy of the gun can be ruined by poor sight setting.

412. Selection of sight setter.—The sight setter should be carefully selected. He need not be a large man or a man of great strength, but he must be steady, attentive, and not gun shy. He must be a man that can hear over a telephone and voice tube; not every man can.

413. Method of training.—After the sight scales have been explained to the sight setter and he has been shown how to manipulate the mechanism, he must be drilled at sight setting. He should be trained to approach the setting slowly and not pass it and have to come back to it. This drill should be carried out daily for 10 or 15 minutes until he is proficient, and then often enough to keep him so. The orders for the setting—i. e., the actual ranges and deflections—should come over the regular fire-control system to accustom the sight setter to its use. This may not always be practicable, but should be done if possible. The setting should be carefully checked by a responsible person, preferably the division officer himself, or,

if this is not possible, the gun captain. Each sight setter should be provided with a notebook or blank form to record ranges and deflections received and set. A recorder should be detailed at each drill to make these entries. Accuracy should first be insisted upon, and, when this is acquired, speed should be developed. Many shots miss the target because of slow or inaccurate sight setting.

MISFIRES AND HANGFIRES.

414. Definition of misfire.—A misfire occurs when an attempt is made to fire the gun and the charge fails to explode.

415. Classification.—Misfires may be divided into two classes:

- (1) Primer misfires, when the primer fails to explode.
- (2) Charge misfires, when the primer explodes, but the charge fails to explode.

416. Definition of hangfire.—A hang fire occurs when there is an appreciable interval between the *attempt* to fire and the explosion of the charge. It is evident that a hangfire can occur only after an apparent charge misfire.

Whenever an attempt has been made to fire and gun fails to fire, a hangfire shall be regarded as probable (Regulations 972 (39) (b)).

417.—Causes of primer misfires.—The most frequent causes of primer misfires are:

- (1) Electric:
 - (a) Failure to close contact.
 - (b) Poor or broken connections; not carefully tested before firing or jarred out, or cut during firing.
 - (c) Ground on the circuit.
 - (d) Dirt or grease on primer or contact lugs.
 - (e) Insufficient voltage—battery run down.
 - (f) Defective primer—rare.
- (2) Percussion:
 - (a) Broken firing pin.
 - (b) Weak mainspring.
 - (c) Dirt under firing-pin shoulder.
 - (d) Firing pin not directly over cap of the primer.
 - (e) Defective primer—rare.

418. Causes of charge misfires and hangfires.—The most frequent causes of charge misfires and hangfires are:

- (1) Powder loaded in wrong—ignition end of charge forward.
- (2) Powder shoved in too far.
- (3) Powder wet.

419. Classification of guns for consideration of misfires and hangfires.—Guns may be divided into three classes, as follows:

- (1) Bag guns (guns using combination primers in locks that permit of removing the primer without opening the breech).
- (2) Guns using combination primers in a brass case.
- (3) Guns using percussion primers in a brass case.

420. Procedure.—(1) The following tables are given as the simplest means of showing the procedure in case of a misfire, always bearing in mind that a charge misfire may, at any time, develop into a hangfire. In making out Tables I and II it is taken for granted that electric firing is the primary method, and that where both a battery and a motor generator circuit are fitted both will be tried before the pointer calls "misfire."

(2) The rules of procedure are drawn up on the following general principles:

(a) That every effort consistent with safety shall be made to fire the gun.

(b) That none of the means taken to fire it shall involve any risk of an accident by unlocking the breech during a possible hangfire.

(3) The words "Fires" and "Misfires" in the tables refer to the charge and not to the primer.

421. Procedure for Bag guns (guns using combination primers in locks that permit of removing the primer without opening the breech) using pointer fire.—

TABLE I.

Misfires electrically (battery and motor generator).	Cock lock and try percussion. If it	Fires.	Examine connections and try electric on next shot. If it	Fires	{ Connections are O. K. Continue electric firing.
				Misfires	{ Use percussion firing thereafter.
	Misfires Extract primer and see if it has exploded. Insert new primer and try electrically.	Fires	If it	Fires	{ Connections are O. K. Continue electric firing.
				Misfires	Try percussion. If primers are found to have exploded, continue to fire primers as long as there is a reasonable chance of igniting the charge. If the primers have not exploded (which will rarely be the case) keep trying new ones until one explodes. If all attempts fail to explode the charge but you have succeeded in exploding primers, WAIT 30 MINUTES before opening breech.

422. Procedure for guns using combination primers in cartridge cases using pointer fire.—

TABLE II.

Misfires electrically (battery and motor generator).	Cock lock and try percussion. If it	Fires	Fires { Connections O. K. Continue electric firing. Misfires { Fire by percussion thereafter.
		Misfires	
	Cock lock and try again by percussion. If it	Fires	Fires { Try electric next shot. Misfires { Try several times both by percussion and electricity.
		Misfires	

423. Procedure for guns using percussion (only) primers in cartridge cases.—

TABLE III.

Misfires	Recock and keep trying until it fires or until there is no reasonable chance of it doing so. If it	Fires	Fires { Continue. If it has misfired repeatedly a new main-spring should be put in.
		Misfires	
	WAIT 30 MINUTES FROM LAST TRIAL BEFORE OPENING BREECH. Examine firing pin and mainspring.		WAIT 30 MINUTES FROM LAST TRIAL BEFORE OPENING BREECH. Examine firing pin and mainspring.

424. Use of priming tools.—In removing and inserting primers in turret guns, after a misfire, the tools issued for the purpose should be used. In case the misfire should develop into a hangfire, the recoil of the gun might seriously injure anyone attempting to prime without the use of the tool.

425. Calling misfire.—Too much emphasis can not be laid upon the necessity for the pointer *immediately* calling "Misfire" as soon as he realizes that his gun has not fired after he has tried both electric circuits.

426. Procedure in time of war.—Where the possible chances of serious danger due to misfires may be overbalanced by the more important considerations of battle, the commanding officer may, at his discretion, decide what interval shall intervene between the occurrence of a misfire and the opening of the breech.

NOTES ON LOADING.

427. Rapidity of loading.—Rapidity of loading depends upon:

(1) The rapidity with which each member of the gun crew performs his duty.

(2) The precision with which each member of the gun crew performs his allotted portion of the drill.

(3) The teamwork of the crew as a whole—that is, upon each member of the crew performing his duty in the service of the gun at exactly the proper time and in exactly the proper way and without interference with other members of the crew.

428. Accuracy.—Accuracy and thoroughness in every detail, even though it may require slightly more time, is an absolute requisite to real rapidity of loading. Eagerness for excessive rapidity may result in serious delays caused by interference, confusion, and casualties that can be avoided only by precision in every movement. It must be remembered that these delays may more seriously interfere with the rapidity of fire than the deliberation necessary to avoid them.

429. Movement required in loading.—In devising a drill for a gun it should be borne in mind that the less movement required of the members of the crew, the less liable they are to interfere with each other, or to be in one place when they should be in another. This is especially true of broadside guns to which the ammunition must be brought by hand. For this reason it is very much better to have one man, the first shellman, load all the shells, and have the other shellmen keep him supplied therewith, than to have them alternate in loading the shells, each providing shells for himself. The same is true of the powdermen. The less movement required, the better.

430. Development of loading drill.—The aim of every division officer should be to so drill his gun crews that they will work with the precision and certainty of a well-regulated machine. In order that this may be accomplished it is necessary that each man thoroughly understands his duties and the best way of performing them. To this end the man should first be told exactly what his duties are and how to perform them; then he should be drilled in their performance. The drill will have to be slow at first, gradually developing speed, but not at the expense of accuracy. When the division officer is satisfied that the crew has reached a satisfactory state of efficiency only enough drill is necessary to keep it from going backward.

431. Amount of drill.—The exact amount of drill necessary will depend upon the type of gun and the individual men. No definite rules can be laid down. In order to stimulate interest and to arouse a spirit of competition among the crews it has been found advantageous to keep the times of a certain number of loads for each crew and at the end of the drill to post the average on the division bulletin board. It is surprising how rapidly the crews will develop when a spirit of friendly rivalry exists among them. This rivalry must never be permitted to go beyond the friendly stage, however.

432. Carelessness in loading.—Careless loading may easily put a gun out of action for a considerable time. For instance, if the screw box is burred badly, the plug will not close; if the powder bag is loaded in wrong end first, a misfire or hangfire may result. It is therefore necessary that the crew reach a high state of efficiency in respect to care of material.

433. General rules in loading.—A few general rules, applicable to nearly all guns, are here given:

(1) *Bore clear.*—Before loading a bag gun fitted with a gas-expelling device and using powder put up in bags, a designated member of the crew will look through the bore and report "Bore clear." The most available member of the crew will be designated for this duty. This is to guard against failure to remove the tompion before the first shot and thereafter to insure against any foreign matter or inflammable gas being left in the bore.

(2) *Seating shell.*—Experiments have shown that a failure to seat the shell causes a variation in the range of the gun. This is caused by the escape of gases past the shell before it takes in the rifling. It is absolutely required in all guns using separate ammunition that the shell be rammed home with a rammer. Great care should be taken by the rammerman to insure that the shell is properly seated.

(3) *Ignition charge.*—In loading the powder bags in a gun, care must be taken that the ignition charge is always to the rear; otherwise a misfire or hangfire may result. The last charge to be loaded in should be just clear of the mushroom head.

(4) *Priming*.—The priming of bag guns while the breech is open is not permitted, and the breech plug must be closed and locked before the primer is inserted in the firing lock, except in those guns where the wedge block, containing the firing pin, is arranged to operate automatically by the functioning of the breech mechanism in such manner that the firing pin can not be brought opposite the primer until the plug is closed and locked. In the latter case the primer may be put in the lock while the breech is open. With locks that are operated by hand the plug must be closed and locked to within about one-fourth of an inch of contact before the primer is inserted in the lock. After the primer is inserted the plug should be completely locked. If it is desired to fire by percussion, and it is necessary to cock the lock and then fire it with a lanyard, the lanyard must be hooked before the lock is cocked.

(5) *Loading tray*.—Every precaution must be taken against injury to the screw box and gas-check seat. To this end a loading tray must always be used except with fixed ammunition and with bag guns, in which it has been demonstrated that the gun can be loaded without appreciable danger without a tray.

(6) *Handling ammunition*.—For case guns, the shellmen should provide themselves with knives for cutting the lashings on the boxes and with waste for wiping off the cartridge cases. Before target practice case ammunition should be gotten up, thoroughly cleaned and tried in the gun, but if at any time the ammunition to be used has not been cleaned and wiped off, the above precautions are necessary. Care must be observed that no waste falls in the screw box or gets in the bore. Sometimes when handling case ammunition the projectile starts from its seat in the case. This should be looked for and shell reseated before attempting to load or the breech will not close.

(7) *Mushroom*.—When firing bag guns, the mushroom head must be wiped off with a wet sponge after each shot.

(8) *Firing pin*.—When firing case guns, while the plug is open the plugman should pass his hand over the face of the plug to insure himself that the firing pin is housed properly. This is to guard against having a projecting firing pin strike the primer as the plug swings shut, thus causing a premature explosion and possible disaster.

(9) *Ammunition supply*.—The prompt and regular supply of ammunition is essential to efficiency, therefore actual exercise in that feature is as necessary as is exercise at the gun. Rapid loading, without a corresponding rapid ammunition supply, is without value, and this supply includes every operation from taking the ammunition from the magazine and unboxing it to loading it in the gun. Especial attention should be given to providing for the disposition of cartridge boxes or powder tanks in such a manner as least to interfere with rapidity of serving the gun.

(10) *Shell slipping.*—Watch the first shell shoved home in a clean gun. If the gun is elevated (as by ship rolling), the shell is very apt to slip back and not be home when the gun is fired. This is caused by oil on the compression slope, and it may occur after the powder charge is home and thus not be seen. Its effect is to reduce the velocity. If the shell is persistent in slipping back, tie a little grommet of small twine around it just forward of the band. If a shell goes home properly it emits a nonmistakable, clear, ringing sound. If it gives a dull thud it is not home.

(11) *Clearing the vent.*—It is seldom necessary to clear the vent. If it be found necessary, the priming wire should be used from the forward end of the plug, care being taken to avoid scoring the primer seat. After clearing the vent with the primer wire, take care to clean thoroughly the primer seat with the vent cleaner. In case of a blowback, the vent and primer seat should be examined for scoring and thoroughly cleaned. The vent drill will not be used except under the direct supervision of an officer.

(12) *Fired primers.*—Keep primers that have been fired out of reach, otherwise somebody may try to use them again. This has not infrequently happened.

NOTES ON GUN DRILLS.

434. Detailed drill.—Type turret and broadside gun drills are given as guide.

These drills are to serve as guides for standard practice, but are not necessarily to be adhered to when the design of turret or type of vessel does not permit, or when it is clearly evident that changes will result in improvement in the drills. Turret officers, knowing the peculiarities of their own turrets, are best able to cope with their individual difficulties and develop their own drills. As a partial guide and to standardize practice the following general rules are given:

435. Control of turret.—When both guns of a turret are being fired the turret officer must still retain perfect control of his turret. The junior officers of the turret and the turret captain are his assistants for this purpose.

436. Turret stations.—

(1) *Turret officer.*—The station of the turret officer is habitually in the turret booth. If the turret is not fitted with a booth, he must be where he can best exercise his command of the turret.

(2) *Junior officers.*—If there is only one junior officer, his station is usually in charge of the ammunition crew. If there are two or more, one of them should be in the turret to assist the turret officer. Junior officers should be thoroughly familiar with the operation of the turret, as they may, at any time, be called upon to take command of it.

(3) *Turret captain*.—The turret captain is stationed at the discretion of the turret officer. It is considered best to put him in direct command of one gun, and a junior officer (if available) in direct command of the other, the turret officer supervising both.

(4) *Gunner's mates*.—Every turret has permanently assigned to it one or more gunner's mates. These can not be used as members of the guns crews, but should be stationed where they will be available in case of breakdown.

(5) *Turret electricians*.—Every turret should have an electrician permanently detailed for duty in the turret, and whose battle station is in the turret. His duties are to keep the electrical installation in good working order, and his battle station is wherever he can best lookout for fuses and circuit breakers.

(6) *Gun captain*.—Each gun of a turret should have a gun captain qualified or acting. He should be selected with great care, due weight being given to ability to handle men, knowledge of the gun and mount, alertness, keenness, and judgment. He may have no additional duties, or may occupy a station of the loading crew. In any case he should be in a position to observe and direct the work of the crew.

(7) *Pointers and sight setters*.—Every gun in a turret must have at least two pointers. These are usually called first and second pointers.

(8) *Trainer and sight setter*.—Every turret requires a trainer and a trainer's sight setter. These are usually called first and second trainers. Their stations are, respectively, at the training wheel and the trainer's sight mechanism, and their respective duties are to keep the turret trained on the target, and to keep the sight set according to the orders through the fire-control system.

(9) *Messengers*.—It is well to have a messenger in the turret and one in the handling room. The one in the turret should be in the booth with the turret officer, and the one in the handling room should be at the voice tube leading to the turret.

(10) *In charge of handling room*.—When there is no junior officer in charge of the handling room, a petty officer, thoroughly familiar with the drill, should be placed in charge and held accountable.

437. Living in turrets.—Gunner's mates, turret electricians and their helpers should live in the turret, and one of them should always be required to be there. There should be no objection to these men making themselves as comfortable as possible therein, provided the efficiency of the gear is in no way impaired, the turret and handling room kept clean and in order, and abuses against discipline prevented.

438. Giving commands.—Commands involving the whole turret should, of course, be given by the turret officer. The junior officer, or turret captain, in charge of one gun, or the gun captain, may give orders or commands as necessary in the service of his own gun. Unnecessary commands tend to confusion. The drill should be carried out in perfect silence, each man performing his own duty quickly, and with as little interference with others as possible.

439. Loading position.—In those turrets that require the gun to be brought to a loading position (approximate) care should be taken to inform the pointer when the gun is again ready for movement in elevation. This time will vary with different guns, depending upon the method of loading the powder; but in case the pointer is allowed to elevate the gun before the breech is closed, it is especially important that the shell be seated securely to prevent it slipping back out of the breech.

440. Standard gun crew titles.—There is a tendency to carelessness among young officers in naming the different members of a turret crew.

441. Assignment to turret stations.—A man should be stationed in the position that he is best qualified to fill. Each man should be trained for as many stations as practicable, though specially trained for his own particular station. Generally the greater the number of stations a man is capable of filling the better is he able to perform the duties of his own, and the better the duties of those who may be disabled will be absorbed by the remaining members of the crew. The gun captain will be responsible for the service of the gun in action. Gun captains should not be finally selected until the division officer knows his men thoroughly. The gun captain should not be recommended for examination until he has been through at least one target practice while acting in that capacity. Plugmen should be strong, quick, and steady. Men who are mentally quick should be selected to run electric gear, rammers, hoists, etc.

442. Preliminary instruction in loading.—Having tentatively stationed the gun crews, the first drill periods should be devoted to explaining and demonstrating the gear. The men should be taught at this time the general scheme of loading, nomenclature of parts, the necessity for precision and safety regulations. After these are understood the individuals should be drilled in their particular duties. Each movement of each man should be studied until the best, surest, and quickest method of accomplishing each task is discovered. Insist upon precision rather than speed. The candidate for each position should carefully practice his part until fairly proficient, and then the crew can be given exercise in loading.

443. Loading exercises.—In the complicated power loading turrets save the gear as much as possible. After a load criticize in detail each mistake. Then load once more, and repeat the lecture. It is a frequent and bad practice to slam through seven or eight loads, all imperfect in some detail.

444. Timing loads.—As soon as the crews can load with precision begin to pit them against one another. Speed in loading is the natural result of precision and team work. In the event of mishap always have the fault remedied as would be the case in service, and *always complete every load that is attempted*. The time should be taken from shot to shot, as seconds saved in loading may be readily lost by the pointer.

445. Priming.—The plugman should practice priming many times a day until proficient.

446. Powder passing.—If the powder is passed by hand, the passers should be required to pass at least 50 bags a day. This can be accomplished by sending the bags up on one side of the turret and down on the other. Care must be exercised to always have the strap end of the bag uppermost, and that this strap is not used in passing the bags. The powder passes should be drilled daily until they are developed, and can continue their duties without becoming fatigued. Every individual who handles the powder must understand that the ignition end of all bags must be toward the breech. Instruction must be given regarding the care to be taken in handling bags—the breaking of a single powder bag may interrupt or delay the firing, and should not occur.

447. Training of pointers.—Having become familiar with the gun and its appurtenances, the candidate for pointer should be taught the significance of the “stand-by” and the “firing” signals, the time interval to be used, etc., the necessity of being “on” when he fires, to “hold fire” if he is not “on,” and in general given a thorough knowledge of the system of spotting and fire control. It is not sufficient to tell a pointer that “the better the pointing the poorer the results if the sights are incorrectly set.” He must be told WHY. He should understand enough of the principles of fire control to know WHY implicit obedience to the orders of the spotter is necessary, and why an attempted betterment of the spotter’s corrections will certainly result in disaster. He should understand the firing connections, the methods of firing, and the safety precautions. After instruction has been given the candidate for pointer, he should be put through exhaustive tests. The time to be spent on each man will vary considerably, but sufficient time must be allowed to give each candidate a thorough and impartial examination. Too little attention is sometimes paid to the consistent drilling of pointers. The turret should be in a state of pre-

paredness at all times, and should have an adequate supply of expert gun pointers.

448. Selection of pointers to continue training.—Some men will soon begin to do better than others, the groups of candidates should be rearranged, putting the best men together. The best and steadiest should be tried at training, as this is the more difficult position. After a few drills and trials of different groups, the poorer ones can be dropped, and the entire time devoted to the training of those who have shown themselves to be the most promising.

449. Safety.—*All safety regulations must be strictly obeyed.* In stationing the crew regard must be had to their safety under all conditions. Arrangements must be made so that ammunition cars can be loaded in safety. The turret officer is responsible for the crew, and every precaution should be taken to avoid accidents to them.

INTERMEDIATE CALIBER AND MINOR CALIBER GUN DRILLS.

450. Drills.—The following drills for broadside guns are those which have given the best results in service. While strict compliance with them is not mandatory, it is believed that they are the best that have been developed to date, and they should be followed until opportunity to observe results and experience sufficient to lead to improving them have been had.

451. Service of 3-inch, 50-caliber semiautomatic anti-aircraft guns.—

(1). *Title and stations of gun crew.*—

Title.	Station.
Plugman (gun captain)....	Near operating lever, in charge of crew.
Pointer.....	At elevating wheel.
Trainer.....	At training wheel.
Sight setter.....	At sight-setting mechanism.
First shellman.....	Left and rear of breech. Acts as gun captain in absence of gun captain.
Second shellman.....	Rear of first shellman.
Third shellman.....	Directly in rear of breech.
Fuse setter.....	Standing by ammunition which may be in racks, boxes or on deck.
Gunner's mate.....	Standing by his tools.

2. Commands.—In the service of the gun the following commands shall be used:

(a) *Stations.*—At this command, which may be given at any time or in any formation, the crew goes at once to their gun, take their respective stations preparatory to loading and firing the gun, keep

silence, and await further commands. The gun is supposed to be ready for the exercise required when this command is given.

(b) *Table*.—(Give number of F. C. table); *zone* (give number of F. C. zone). NOTE.—See Ordnance Pamphlet No. 145 or brass plates on guns which give for the various tables and zones:

(1) The sight-bar range.

(2) The fuse setting. The fuse is set, if not already set. The sight is set for range.

(c) *Scale*.—(Give reading on arbitrary deflection scale.) The sight is set for deflection.

(d) *Load* (the “table” and “zone” having been received).—Pointer and trainer keep gun pointed on target if already designated. Sight setter sets sights as ordered. Plugman (gun captain) supervises; opens plug, if not already open. First shellman loads and shoves home the cartridge case, its fuse setting being that designated. Second shellman hands another cartridge case to first shellman. Third shellman stands by to catch the empty case when the gun is fired. If empty case does not come clear out, he extracts it. Fuse setter sets fuse for designated zone.

(e) *Train on* (designate target); *bearing* (give number of degrees target bears from ahead to the right); *elevation* (give number of degrees gun is to be elevated). Note.—Point of aim is the middle of the target unless otherwise designated. The gun will be trained on the target.

(f) *Commence Firing!*—This command may be given either before or after the gun is loaded. If it is given before, the gun will be loaded at once. The table, zone, scale, and target having been designated, the firing and service of the gun are started.

The pointer will fire when on target provided the gun is ready, the sights are set, and a firing signal is sounding.

The gun will be reloaded as soon as fired and firing will continue until the ammunition is exhausted or until the command “cease firing.” In case a new zone is ordered take care that thereafter the gun is loaded with cartridge having the latest fuse setting.

(g) *Silence!*—This command is given if, for any reason, it is necessary to stop temporarily the service of the gun. It may be given by the division officer or by any member of the crew noticing something requiring immediate attention. When it is given, every member of the crew ceases all operations, stands in his tracks, and awaits instructions.

If a member of the crew calls “silence” he will point out to the division officer or gun captain what he has observed.

(h) *Carry on!*—After the command “silence” the defect having been remedied, this command is given, at which the crew resume the operation in which they were engaged when command “silence” was given.

(i) *Cease firing!*—The service of the gun is stopped. If the gun is loaded the plugman opens the breech. The first shellman withdraws the cartridge case and sets fuse at "safety."

All safety precautions with reference to misfires and hangfires will be strictly observed.

If the crew leaves the gun at any time, the gun shall be left in the condition of "*cease firing.*"

(j) *Unload!*—This command will only be given after the gun is loaded and before the command "*commence firing.*" The procedure is the same as at "*cease firing.*"

(k) *Secure!*—The members of the crew under the supervision of the gun captain return everything that has been provided and secure the gun. Ammunition is returned to the magazine. If gun has actually been fired, the crew assist the gunner's mate in washing out and oiling the bore. The crew fall in for muster.

3. *Duties of members of crews.*—(a) *Gun captain.*—The gun captain is the direct representative of the battery officer and in absolute charge at the gun. He is responsible for the conduct, efficiency, and spirit of the crew. He will be often detailed to conduct drills and must know all about his gun, the duties of each member of the crew, first aid, and the action needed to meet all casualties.

He is responsible for the gun and crew; for carrying out all safety precautions; and must report immediately to the control officer and the battery officer any casualties or unusual conditions.

He is responsible for all gear at the gun and for the prompt and accurate execution of all orders received from the control officer. He sees that individual duties are properly performed by members of the crew. He tests the breech mechanism.

In preparing for exercise he provides lanyards, recocking tool, hand electric light and knife with which to open ammunition boxes. Assisted by the second shellman, removes tampion. On manning gun reports via sight setter to control officer when gun is ready. Operates breech plug as necessary—that is, if the semiautomatic attachment is not being used, or if the plug does not remain open after firing.

Watches gun to see that it returns to battery.

Watches lock-plate locking device and sees that it is properly set.

Sees thrust cam properly set and operating lever disengaged from shaft.

Calls "*Ready*" to pointer when breech is closed after loading.

In unloading opens breech slowly and carefully.

In case of *misfire* and gun is "*in battery*" plugman recocks and calls out "*Ready.*" If gun still misfires he removes firing pin and examines same, replacing spare parts when necessary.

In case gun fails to return to battery by not more than 2 inches, plugman sings out "*Fire by lanyard!*" and after gun is loaded hooks

lanyard, sings out "*Ready*" and stands by to fire when pointer sings out "*Fire!*"

In case the gun is more than 2 inches from "in battery" he (assisted by gun crew) endeavors to jar gun back to battery by using a heavy weight against the breech.

NOTE.—Marks should be painted on the gun and slide to indicate to the plugman whether or not gun has returned to battery.

In case *breech plug jams* in closing, plugman closes it, using hand pressure on bottom of plug. If plug still fails to close, he extracts shell, using operating lever, and examines bore.

In general, gun captain replaces firing mechanism as necessary, and handles all casualties.

(b) *Pointer*.—The pointer operates the elevating wheel to keep his horizontal wire continuously on the point of aim.

In preparing for exercise he removes eight caps, cleans and focuses sights as necessary (sight caps are kept on except when gun is actually in use). He examines firing mechanism and sight lights, tests elevating gear, checks cross wires with trainer and reports "*Ready*" to gun captain.

He fires the gun but only after the following conditions are met: "*Commence firing*," given, gun reported "*Ready*" by plugman, sight set and reported "*Set*" by sight setter, and firing signal sounding. It is imperative that the pointer and trainer keep continuously on the target, since the pointer must not miss a firing signal.

Gun will be customarily fired, using electric firing circuit.

If gun fails to fire upon attempt to fire, pointer sings out "*Misfire!*"

In case gun captain has ordered "*Fire by lanyard*," after report of "*Ready*," when pointer wishes to fire, he sings out "*Fire*" and gun captain pulls firing lanyard.

In case of *blurred sight*, pointer cleans it with lens paper.

In case of *cross wires jar out of adjustment* he informs gun captain by singing out "*Cross wires cut*." This will be apparent if much coaching is required to get trainer on.

Pointer's sight is first assumed to be correct.

If it is apparent that pointer's sight is wrong, or if it is destroyed, he sings out "*Trainer fire!*"

Thereafter pointer elevates as trainer directs and fires gun when trainer sings out "*Fire*," if firing signal is sounding.

In case of *hangfire* keeps gun pointed clear of friends.

(c) *Trainer*.—Operates training wheel to keep vertical wire continuously on the point of aim or as directed. He should require but little coaching from pointer after they have once checked up.

In preparing for exercise he takes off sight covers, provides lens paper, cleans and focuses sight as necessary, examines night sight lights, checks cross wire with pointer, tests training gear, and reports

“Ready” to gun captain (sight caps are kept on except when gun is actually in use). Trains on designated bearing or target.

In case of hang fire keeps gun trained clear of friends.

In case of blurred sight cleans it with lens paper.

(d) *Sight setter*.—Sets sights, wears phone, and transmits all communications between gun and group control officer. In preparing for exercise provides and plugs in telephone and tests communication with control officer. Corrects and tests night sight lights and battle lantern. Tests sight mechanism and checks zero of range dial and sword arm.

Operates range and deflection scales as directed by group control officer. Sets sight, range first, reporting “Set” to pointer and touching him lightly when sights have been set.

This report of “Set” will also be made after gun captain’s report of “Ready” if not actually changing sight setting.

Repeats all orders to the gun captain coming from control officer, and so fuse setter can hear him. If ranges or orders are not understood sings our “Repeat” over telephone.

During firing, should a regular firing interval elapse, (after sights are set) without a firing signal reaching him, reports to control, “No buzzer on gun!” making sure he has been heard by requiring an acknowledgment.

Minimizes talking over telephone to give communication from control the right of way.

He will not change sight setting while a firing signal is sounding.

(e) *First shellman*.—Receives cartridge from second shellman and loads gun.

In preparing for exercise assists sight setter connect up battle lantern, provides bucket of clean fresh water, loading glove, and clean hand swab.

Stands in rear of left of breech, facing to right, as close to gun as safety will permit.

Receives cartridge from second shellman, holding it close to the breech parallel to the bore, above the path of the empty case in ejection, left hand under cartridge case about at the balance, right hand on the base, fingers extending upward. Loads smartly by aligning cartridge with bore and following it home with the right hand, letting the breechblock force the hand upward in closing, being careful not to get fingers caught in breech. Be careful to have the point of the shell in center of bore to avoid hitting the fuse.

In unloading receives the cartridge and sets fuse at safety and passes cartridge to second shellman.

(f) *Second shellman*.—Keeps first shellman supplied with cartridge.

In preparing for exercise assists gun captain (plugman) to remove tompion and to clear deck of obstacles. Rigs davit for getting ammunition to guns.

Stands in rear of gun and to right of first shellman; receives cartridge with both hands around the middle so that the first shellman may receive it in position to load from fuse setter; hands cartridge to first loader with point toward breech.

In unloading receives cartridge from first shellman and replaces it in the supply.

(g) *Third shellman*.—Catches ejected cases and throws them clear of the service of the gun.

In preparing for exercise assists second shellman in clearing deck of obstacles and to rig ammunition davit if necessary.

Stands to rear and right of gun.

(h) *Fuse setter*.—Sets shrapnel fuses as directed by group control officer over telephone. Hears sight setter repeat “table” and “zone,” and consults table (similar to brass plate on gun) to obtain fuse setting. If this table can not be read, obtains fuse setting from sight setter.

In preparing for exercise provides table of fuse settings, fuse wrench and pliers to remove fuse caps.

NOTE.—When there is possibility of an attack, ammunition should be kept in ready boxes near the guns, with fuses set, the shell of like fuse settings grouped together by zones, e. g., zone 1, 1 second seconds, etc.; zone 12, 12 second seconds. As shells from a zone are used the fuse setter sets fuses for a similar number of shells and thus keeps racks or boxes filled.

GUNNER'S MATES.

General duties.—Provides spare parts and tools, and prepares to repair any casualty likely to occur. Inspects all guns just prior to firing.

NOTE.—Clearing away generally in wake of gun, if not already done, will be done by the whole crew under the gun captain's direction.

Similarly ammunition will be provided at the guns, the ammunition being obtained from the ammunition crew who bring it to the main deck level.

Misfires.—The most frequent causes of misfires are: Failure of the gun to completely return to battery, causing the trigger arm to fail to engage the sear bar; broken firing pin or weak spring.

Removal of personnel casualties.—It is the duty of the gun crew to continue the service of the gun and to overcome every obstacle which interferes therewith. The gun crew will, therefore, not cease their operations of loading, but two men nearest to the wounded man should, without orders, place him in any convenient position clear of the working of the gun and return to their duties.

Changing stations.—As soon as the personnel is fairly proficient at their regular stations they should be exercised at other stations in their own units, in order that the personnel may be proficient not

only at their own stations, but also have a thorough idea of their relation to the rest of the personnel and have a groundwork for training as reliefs.

NOTE.—The foregoing standard instructions for service of the antiaircraft guns are issued for the guidance of all concerned.

Attention is also invited to requirements of safety orders (Naval Instructions).

452. Service of 4-inch, 50-caliber case gun.—

(1) *Titles and stations of gun crew.—*

Title.	Station.
Plugman (gun captain)	At operating lever.
Pointer	At elevating wheel.
Trainer	At training wheel.
Sight setter	At sight mechanism.
First shellman	Left and rear of breech.
Second shellman	}Rear of first shellman.
Third shellman	
Fourth shellman	Right and rear of breech.

NOTE.—More shellmen may be required if the ammunition supply is difficult.

(2) *Commands.—*

(a) *Stations!*—At this command the crew go to their stations preparatory to loading and firing the gun.

(b) *Load!*—(The gun having been fired.)

Pointer and trainer keep gun on target.

Sight setter sets sights as ordered over fire-control system.

Plugman opens breech and feels face of plug to see if firing pin is housed.

First shellman inserts and shoves home the cartridge case.

Plugman closes breech and calls out “Ready!”

Second and third shellmen provide ammunition to first shellman.

Fourth shellman stands by to remove empty case after gun is fired.

(c) *Commence firing!*—This command may be given either before or after the gun is loaded. If it is given before, the gun will be loaded at once. The firing and service of the gun are started, the pointer firing on the firing signal, or when on the target, depending upon the nature of the practice being conducted. The gun is reloaded as soon as fired, and firing continues until the ammunition is exhausted or until the command “Cease Firing!”

(d) *Cease firing!*—The service of the gun is stopped.

If the gun is loaded, the plugman opens breech.

First shellman withdraws loaded cartridge case.

(e) *Unload!*—This command will be given only after the gun is loaded and before the command “Commence Firing!” Procedure is the same as at “Cease Firing?”

(f) *Secure!*—The members of the crew, under the supervision of the gun captain, return everything that has been provided and secure the gun. If the gun has actually been fired, the crew assist the gunner's mate in washing out and oiling the bore. The crew fall in for muster.

453. Service of 5-inch, 51-caliber bag gun.—

1. *Titles and stations of gun crew.*—

Title.	Station.
1. Plugman (gun captain).	At operating lever.
2. Pointer.....	At elevating wheel.
3. Trainer.....	At training wheel.
4. Sight setter.....	At sight mechanism.
5. Trayman.....	At left and rear of breech.
6. Rammerman	{At left and rear of first shellman. Commands in absence of gun captain.
7. First shellman	Rear of breech facing to right.
8. Second shellman.....	Rear and right of first shellman.
9. First powderman.....	wear of breech slightly to the right.
10. Second powderman.....	At left of first powderman.
11. Powder passer.....	At hoist or scuttle.

2. *Commands.*—In the service of the gun the following commands shall be used:

(a) *Stations!*—At this command, which may be given at any time or in any formation, the crew go at once to their guns, take their respective stations preparatory to loading and firing the gun, keep silence and await further commands. The gun should be ready for the exercise required when this command is given.

(b) *Load!*—The crew being at their stations go through the operations of loading the gun.

(c) *Train on (designate target)!*—Bearing (give relative bearing of target). The gun will be trained on the target. Use standard point of aim unless otherwise ordered. (Middle of target at the water line.)

(d) *Range.*—(Give range in yards.) *Scale.*—(Give reading on deflection scale.) The sight will be set.

(e) *Commence firing!*—This may be given either before or after the gun is loaded. If given before, the gun will be loaded at once. The target, range, and scale having been designated, the firing and service of the gun are started. The pointer will fire when on the target provided the gun is ready, sights are set, and a firing signal is

sounding. The gun will be reloaded as soon as fired. The firing will continue until the ammunition is exhausted or until the command "*Cease firing!*"

(f) *Silence!*—This command is given when, for any reason, it is necessary to stop the service of the gun. It may be given by the division officer or by any member of the crew noticing something requiring immediate attention. When it is given, every member of the crew ceases all operations and awaits instructions. If a member of the crew calls out "*Silence*" he will point out to the division officer or gun captain, what he has observed.

(g) *Carry on!*—After the command "*Silence!*" the defect having been remedied, this command is given by the gun captain at which the crew resume the operation in which they are engaged when the command "*Silence!*" was given.

(h) *Cease firing!*—The service of the gun is stopped. The gun captain extracts the primer and examines it to see that it has not been fired. Exposed powder charge is replaced in tank and covered.

(i) *Unload!*—Gun captain extracts primer to see that it has not been fired. The following disposition will be made of the charge:

IMMERSE IN DISTILLED WATER.

1. (a) If primer has been fired.
(b) If there has been a misfire.
(c) If gun is still warm and no attempt has been made to fire it.
2. If gun is cold and has not been fired, examine charge carefully.
(a) If dry, free from grease, and in good condition put in tank and send back to magazine.
(b) If slightly greasy repack in new bag.
(c) If grease or moisture has gotten into powder immerse in distilled water.

Shellman back out and remove shell, tray being inserted to protect screw box.

(j) *Secure.*—At this command the ammunition will be returned to the magazine, spare parts returned to their places, necessary gear stowed away, and the gun secured.

If the gun has been fired, as soon as possible after the firing has ceased, the gun should be thoroughly washed out, dried and oiled. If practicable this should be done while the gun is still hot.

(k) *Fire by director.*—Pointer and trainer move the gun to follow the pointers in the elevating and training instruments which are operated from the directorscopes. Firing signals are rung. Switch on motor generator. On the firing signal, pointer closes his firing key if his pointers are together, and the trainer notifies him that his pointers are together, by signal light. The firing circuit is com-

pleted by the directorscope operator who closes the master key when the cross wires are on the target. Sights are set to the proper range and scale so that a quick change can be made to pointer fire.

(l) *Pointer fire—Master key.*—Pointer and trainer keep on the target by using sights, disregarding the follow-the-pointer system. Pointer closes firing key at the firing signal if his cross wires are on the point of aim and the circuit completed by the master key in the defense station on the buzzer. Switch on motor generator.

(m) *Pointer fire.*—Switch on battery. Pointer and trainer keep on target using the sights, disregarding the follow the pointer. Salvo signals are rung from the group control station and pointer closes his firing key (firing the gun on the buzzer), if his cross wires are on the point of aim.

3. *Duties of members of crew.*—Gun captains will see that members of their crew read these instructions and understand their duties.

The duties of the members of the crew are as follows:

(a) *Gun captain.*—The gun captain is the direct representative of the battery officer and is in absolute charge at the gun. He is responsible for the conduct, efficiency, and spirit of the crew. He will be often detailed to conduct drills and must know all about his gun, the duties of each member of the crew, first aid, and the action needed to meet all casualties. He is responsible for the carrying out of all safety precautions at the gun and will report immediately any casualties or unusual conditions to control and the battery officer.

He is responsible for all gear at the guns and for the prompt and accurate execution of all orders received from control.

He sees that the following items are at his gun: Combination sponge and rammer, hand rammer, hand sponge, gun and safety rules, tub full of water, and first-aid pouch. All of these are kept at the gun always, but the gun captain is to be responsible for their preservation and care. The gun captain and crews are to remove and replace gun shutters at any time ordered, to remove tompion, and, after drill or firing, to swab out gun if necessary, and to replace tompion and shutters. Gun tubs are to be swung under breech of gun when gun is secured. At drill, both day and night, he is to test out ammunition hoist, leaving cover open during exercise. He sees that primer belt and dummy primers are at the gun, or if firing get live primers from battery officer. For drill, he sees that drill shell and drill bag in tank are at gun. Sees friction disks uncovered so as to set them up easily if they slip, and a large wrench at hand for that purpose; sees battle lantern rigged; sees fire hose led out by traymen, draws circle around gun for recoil (14 inches for reduced charge and 18 inches for full charge), and tests the firing circuit on both generators and battery with test lamp. He provides hand sponge.

Lens paper is kept close at hand by both pointers and trainers for use in case lenses become blurred from sweat during the firing. As they are apt to forget that they have it or that it is only sweat which is affecting their telescope during the firing, and not the telescope has gone wrong (which they usually think), the gun captain is trained to caution them to wipe off their lenses the minute they have trouble.

Eye buffers should have four small holes near the lens to reduce the formation of moisture on the lens.

The standard point of aim is the center of target at water line unless another point of aim is specifically designated.

Finally the gun captain upon receiving the "Ready" from each member of his crew, orders the sight setter to report "Number — ready" over the voice tube to control officer.

He will report the gun ready to control as soon as sufficient men are present to serve the gun, if it be cast loose. He give the orders to the crew for serving the gun and requires a prompt repetition by sight setters of all orders received from control. He inspects pointers' and trainers' telescopes to see that they are set on the same power and properly focused. He sees that his ammunition supply is adequate and that powder passers do not allow powder to pile up at the gun.

He carries primers in a belt. He stands close to gun at its right rear, operates the plug with his right hand, and primes with his left hand. On opening plug, checks swing with left hand to prevent jarring gun; wipes off mushroom with wet sponge attached to wrist of left arm, watches *salvo latch*, to see when gun is fired; notes return of gun to battery after firing; watches firing lock when he closes plug to see that lock is fully closed, and in case of jam takes the action required. He keeps an ear open for the buzzer and wastes no time to have its failure reported; also keeps sight setter constantly attentive.

On opening plug after firing he sees that the first shellman inspects to see bore clear before shell is loaded and that the powderman loads charge with red end to rear, and only after "Bore clear" has been given. When gun is loaded and sights set gun captain sings out "Ready." If gun is loaded and a change of range or scale is received gun captain sings out "Not ready," but gives "Ready" when sight setter sings out "Set."

In any case of *casualty*, gives command "Silence," upon which every member of the crew stops operations and awaits instructions. When casualty is remedied the gun captain commands "Carry on," upon which service of the piece is resumed.

In case of a *jam* where primer jams in primer seat and prevents wedge closing, he ejects primer with considerable force and reprimers.

In director fire in case gun does not fire on the salvo signal on which the pointer calls "Fire" or when the master key is closed, a

misfire exists, wait for next buzzer and try again. If gun misfires again gun captain gives command "*Shift to battery*," which automatically changes the fire to pointer fire—without master key.

In any case of misfire by battery gun, captain cocks lock, holding back cocking arm of hammer with left hand, and sings out "*Ready percussion*." He releases the hammer when pointer calls fire.

If gun fires by percussion, gun captain gives command "*Shift to motor generator*," and again tries director fire. If gun again misfires, shift to battery or percussion as required and report to control that director circuit is out of commission.

If gun misfires by percussion, gun captain sings out "*Misfire, shift primer*," and extracts and examines the primer.

If it has been fired, the procedure for hangfire shall be followed. *Don't open breech.*

If the primer has not fired, gun captain gives command "*Shift to motor generator*," and sings out "*Ready*."

In case of *hangfire* the gun captain makes repeated attempts to fire the gun, feeding primers into the lock as required. If gun fails to fire, the plug shall not be opened until 30 minutes has elapsed after the last attempt to fire the gun. Report to battery and control officer.

In case of *broken powder bag*, stop firing until all loose grains of powder have been picked up from around gun and out of screw box, and dumped into tub of fresh water, and until screw box has been washed out with sponge to insure the removal of all black powder grains. Gun captain wipes out screw box with hand sponge.

In case the gun *fails to return to battery*, gives command "*Cease firing*" and carries out the following procedure. *Don't load the gun.* Depress gun as far as possible. Pointer elevates and depresses quickly with a jerky motion of elevating wheel; trainer trains right and left in same manner; gun crew endeavors to raise gun and jar it back into battery. When gun returns to battery resume firing.

Marks should be fixed or painted on guns to indicate to gun captain whether or not the gun has fully returned to battery.

In case sight *crosswires are out of adjustment* sees that pointer trains on. If firing then proves the pointer's sight to be out sees that trainer sings out "*On*" when he is on target as signal for pointer to fire.

In case pointers appear to have *trouble seeing target* clearly gun captain cautions them to wipe off their sights.

In case of *broken air line* see that valve under gun is shut, and that thereafter in loading the dampened sponge rammer is used in bore following home loaded shell.

In case of *dropped shell*, he stops first powderman with left hand from loading in powder ahead of shell in case latter makes the attempt.

In no case is gun captain to trip salvo latch when gun is loaded unless he gets a direct order to unload, from proper authority.

At drill he is actually to prime the gun with dummy primers and must be given regular and frequent drills in this.

Other casualties such as jammed plug, choked vent, and burred screw box will be remedied as quickly as possible, sending for a gunner's mate for assistance or spare parts.

(b) *Pointer*.—The pointer takes station on the left of gun on platform; operates elevating wheel to keep horizontal wire continuously on the point of aim, or following the pointer in the elevating receiver. When necessary he coaches trainer to keep vertical wire on.

In preparing for exercise, pointer removes sight cap, cleans sights, removes friction disk cover, tests elevating gear, examines firing circuit, sees firing switch on motor generator; checks cross wires with trainer, and reports "Ready" to gun captain.

He fires gun, but only when the following conditions are met: After "Commence firing" has been given by the gun captain, sights reported "Set" by sight setter, the gun reported ready by gun captain after loading, with cross wires steady on the point of aim or pointers together and firing signal sounding buzzer or whistle. He calls out "Fire" when he presses firing key. He must be sure to press down hard on the firing key and hold it down for a second. He shall also be sure to hold the cross wire steady on the target while in the act of firing. If using director or master key fire, he closes his key on firing signal if the pointers are together and the trainers signal light is on, or he is on the target.

If the gun fails to fire, pointer tries again on next buzzer, if gun misfires again shifts transfer switch to battery at once and next attempts to fire by battery—pointer fire, without master key.

If gun fails to fire by battery he calls out "Misfire" and listens for gun captain to report "Ready percussion."

When pointer is again ready to fire, after report "Ready percussion" and when firing signal is sounding, he calls out "Fire."

If gun fires he next attempts to fire by motor generator, if director or master key fire is being used.

In case gun misfires by motor generator and battery, use percussion firing thereafter.

In case gun does not fire by percussion on first attempt, pointer shifts transfer switch on gun captain's order and next tries by motar generator in the usual way. Gun captain will reprime.

In case of *hangfire* he keeps gun pointed clear of other ships.

In a case of *blurred sight*, cleans with lens paper and refocuses telescope.

In case sight cross wires jar out of adjustment he informs gun captain by singing out "Cross wires out." This will be apparent if much coaching is required to get trainer on.

If it is apparent from firing that pointer's sight is wrong (which he can tell by spotting his own shot), or if sight is destroyed, he sings out "*Trainer fire.*"

Thereafter pointer elevates as trainer directs, and presses firing key when trainer sings out "*Fire,*" if firing signal is sounding.

If he can not see the target, he reports the fact and when directed to do so, aims at the horizon. For pointer fire buzzer will be rung 3 seconds off and 3 seconds on except when ranges are being sent to guns (same for master-key firing). For director fire stand-by buzzers will be rung before the director rolls on.

(c) *Trainer.*—The trainer takes station on right side of gun on platform; operates training wheel to keep vertical wire continuously on point of aim as directed by pointer or to follow the pointer in the training receiver. In director fire he closes key when pointers are matched; this indicates to pointer that red and white pointers are together.

In preparing for exercise he turns air on gas ejector; removes sight cap; cleans sights, tests training gear, checks cross wires with pointer; reports "*Ready*" to gun captain and trains on designated bearing or target.

If none is designated trains gun to center of arc.

In case of "*hangfire,*" keeps gun trained clear of other ships.

In case of "*blurred sight,*" cleans with lens paper and refocuses telescope.

In case of casualty to the pointer's sight, at pointer fire, and order is given "*Trainer fire,*" he keeps vertical wire on, coaches pointer to keep horizontal wire on, and sings out "*Fire*" when cross wires are steady on the point of aim.

If he can not see the target, he reports the fact and trains on bearings sent from control.

(d) *Sight setter.*—The sight setter takes station at sight scales, standing erect, feet apart, with left ear close to voice tube; sets sights and transmits all communications between gun captain and control.

In preparing for exercise, he provides and connects telephone, loosens up dogs on telephones trunk when ordered, and tests communication with control. Tests voice tube to control. He turns on sight lights, checks zero of range dial and sword arm, tests sight mechanism by setting range 5,000 and then back to zero, and running deflection drum from 40 to 60, than back to 50.

Passes on to gun captain all orders received from control. If any order is not clearly understood by sight setter he calls "*Repeat*" over voice tube (or telephone).

Sets ranges and scales as received from control, ranges first, repeating them to gun captain, reporting "*Set*" and touching pointer

lightly at the same time when sights have been set. Examines sight drums after each shot and if they have jammed resets them.

During firing, should twice regular firing interval elapse without any firing signal reaching him, sings out "*No buzzer on gun No—*" and makes sure he has been heard by requiring acknowledgement. The sight setter will be particularly careful to set the range and deflection by coming up to the mark and stopping on the mark. Should he revolve the dial or scale beyond the correct range or deflection mark, he will turn back beyond the marks one unit and again approach the correct marks, setting properly. To always set sights accurately from the same direction requires practice, and makes all the difference between a good and a poor sight setter.

(e) *Trayman*.—The trayman operates loading tray to protect screw box and operates gas ejector valve.

In preparing for exercise, he provides loading tray, primer belt, first-aid packet, and assists in removing tampion.

He stands to left and rear of breech, holding tray with *right* hand on upper handle; tray parallel to axis of gun and clear of gun recoil. It is important that tray be held parallel to axis of gun and put in line with axis before shoving in.

As soon as the plug is open for loading, he inserts tray and shuts off air with right hand when shell is seated. He removes tray quickly as soon as powder is shoved home, by withdrawing it to the rear and downward without side pull.

When unloading, after powder is withdrawn, inserts tray before shell is withdrawn.

In case of *lock jam*, he calls out "*Silence*" and announces "*Lock jam*."

In case of *broken air line*, keeps end of hose from whipping around.

In case of *broken powder bag*, assists in removing grains of powder from screw box.

(f) *Rammerman*.—In absence of gun captain acts in his place. Operates combination sponge and rammer in case of foul bore or air line broken.

In preparing for exercise, provides rammer, combination sponge and rammer, and gun safety rules.

He stands to the right of first shellman and close to him, facing breech, left foot forward. Holds rammer against base of shell, when shell is entered in chamber seats same with rammer, makes way quickly for powderman.

In case of *foul bore* or *air line broken*, dips combination sponge and rammer in gun tub, rams shell home, withdrawing sponge with spiral motion which sponges chamber and mushroom.

He keeps careful watch for lock jams and in case of one sings out "*Silence*," "*Lock jam*."

(g) *First shellman*.—Loads shell in gun.

In preparing for exercise he provides loaders' gloves, assists in filling gun tub and drinking-water bucket.

He stands in rear of breech, facing to the right, as close to gun as safety will permit, wears glove on right hand and holds shell point forward, directly in rear and parallel to bore. Observes when plug is opened to see if any smoke, fumes, burning or solid objects are left in chamber of bore after firing. If clear, announces "*Bore clear*" in a loud voice. If not clear, he announces "*Foul bore*," loads shell and blocks powderman clear of gun.

The shell is held in left hand, supported midway between point and rotating hand, with shellman's right palm near the base. First shellman enters shell in chamber and avoids striking tray. Makes way very quickly for powderman. In unloading takes out shell.

In case he notices a *lock jam*, he calls out "*Silence.*"

In case tray is not fully in, he holds up load until tray is fully inserted, so as to prevent burring screw box.

In case he *drops a shell* he lets it lie and takes next one from second shellman.

(h) *Second shellman*.—Keeps first shellman supplied with shells. Holds shell with both hands around the middle when handing shell to first shellman.

He stands to rear and right of rammerman.

In case first shellman *drops a shell*, the second shellman shall immediately hand him another, then pick up dropped shell, keeping clear of possible recoil of gun.

NOTE.—The service of the 6-inch, 51 caliber bag gun is the same as the 5-inch, 51 caliber bag gun.

(i) *First powderman*.—The first powderman loads the powder in the gun.

In preparing the battery for exercise, assists first shellman in filling gun tub, and buckets of drinking water. Wears loading glove, provided by first shellman, on left hand.

Stands in rear breech, facing first shellman and just to right of axis of bore produced. He must be clear of first shellman and gun recoil. Powderman braces himself firmly with feet well apart and with body turned slightly so it is between charge he holds and the breech.

Holds powder bag against his body, red end in left hand, right hand near middle. As shell is loaded powderman shifts weight to right foot, swings his body to right, carrying powder bag forward, inserts bag closely following the withdrawal of rammer, and pushes with left fist. He must be fast in removing his arm from powder chamber.

In unloading withdraws powder charge and passes it to second powderman.

In case of *foul bore* he instantly turns his back to breech fully protecting charge with body, and jumps well clear with powder bag till his gun has been sponged out.

When plug is closed he observes lock, to note a jam, in which he calls "*Silence*" and announces "*Lock jam.*"

In case of *broken powder bag*, calls "*Silence*," "*Broken powder bag*;" and immerses bag in gun tub, and picks up all loose grains and immerses them. He must be constantly on the alert for a dropped shell so as not to load powder in ahead of shell.

(j) *Second powderman*.—He keeps first powderman supplied with powder.

In preparing for exercise, he provides powder can wrench, and assists in getting up ammunition as ordered.

Arranges powder tanks, standing them upright to rear and right of gun; stands to left and rear of first powderman.

When "*Bore clear*" is called, he removes cover from next powder tank and when the charge, already in the first powderman's hands, is shoved into the gun, he pulls next charge out of tank and hands it to first powderman, red end to rear.

When unloading, receives charge withdrawn by first powderman and returns it to tank.

In case of *foul bore* keeps all powder cans closed, and gets them well clear of the gun.

In case of *broken powder bag*, sings out "*Silence*," and immerses broken bag in gun tub, and picks up all loose grains and immerses them.

In case of *broken air line*, shuts air line under gun.

(k) *Powder passer*.—Tends the powder hoist or scuttle and supplies powder and shell to the second powderman and second shellman as required.

In preparing for the exercise, he opens powder hoist, tests flame proof flap, and establishes communications with the ammunition crew.

He stands by his hoist, receives the tank and shell as they come up and places them in a convenient place on deck for the second powderman and second shellman. He gives orders ammunition crew for sending up powder, regulating the powder supply to the rate of fire and preventing the piling up of powder around the gun.

When going into reserve, he closes hoist and sets up on one dog. In case hoist breaks down he secures powder from the adjacent hoist.

TURRET DRILLS.

454. Service of 12-inch 45-caliber gun.

TYPE "FLORIDA."

Stations and duties in brief.

Title.	Station.	Duty.
<i>(a) Turret crew.</i>		
Turret officer.....	Officer's booth....	In general charge.
Turret captain.....	In or near officer's booth.	See turret ready for firing; complete check-off list; provide spare parts; general supervision under turret officers.
Turret talker.....	Officer's booth....	On phones 2JD or 2JE.

POINTERS GROUP.

Right pointer (elevating pointer).	Right elevating wheel.	Provide lens paper; remove dust caps; wipe off lens. <i>In director fire.</i> —Lay guns; wear 1JE or 1JD phone; turn on ready light when guns are laid. <i>In pointer fire.</i> —Shift to two-hand drive and keep horizontal wire on the point of aim. <i>In firing single barrel.</i> —Fire when salvo signal rings and cross wires are on target. Same as right and in addition, in firing double barrel, fire when salvo signal rings and cross wires are on the target.
Left pointer (firing pointer).	Left elevating wheel.	Same as right and in addition, in firing double barrel, fire when salvo signal rings and cross wires are on the target.
Trainer.....	Trainer's booth....	Provide lens paper; remove dust cap; wipe off lens; keep vertical wire on target; in director fire keep pointers together in following the pointer in train; cut out firing circuit when off the target.
Right sight setter..	Right sight setter's station.	Test sight setting gear; wear 1JE or 1JD phone; set all ranges and deflections received and check with visuals.
Left sight setter...	Left sight setter's station.	Same as right sight setter.
Train's sight setter.	Trainer's booth....	Test gear; wear 1JD or 1JE phone; receive and set deflection.

Stations and duties in brief.

LOADING GROUP.

(Right side—Left side same.)

Title.	Station.	Duty.
Gun captain.....	Gun compartment in charge.	See air on gun; test breech mechanism; see tompion out, primer vent clean, and spare parts at hand; supervise loading gun; repeat orders from turret officer.
Hoist and Rammerman (may also be gun captain.)	At hoist and rammer controller.	Test gear; hoist upper car; ram shell and powder; lower car.
Plugman.....	At gun-plug operating lever.	Provide primers; open plug; prime; close plug; turn on loading ready light.
Trayman.....	Trayman's platform.	See bore and service box clear; report; place tray in gun; wipe off mushroom; turn off air when shell is seated; shove in first two powder bags; steady second two bags to be rammed in; remove tray.
Carman.....	Rear end of car.....	Dump powder into car tray in line with bore in front of rammer.
(b) <i>Upper handling room (right side and left side same).</i>		
Signalman.....	At signal hoist to turret. In charge.	Test signal gear; put powder bags in upper car; put signal "Hoist" on indicator and turn on safety switch when car is loaded.
Hoistman.....	At hoist controller; for lower car.	Test gear; hoist car from lower handling room when indicator signal is on "Hoist."
Shellman.....	Alongside shell tray.....	Ram shell into upper car; notifies signalman when car is loaded.
Powder man.....	Alongside powder table.	Put powder in upper car when car is lowered.
(c) <i>Circle deck (electrical deck).</i>		
Turret electrician..	Electrical deck....	See electrical gear working; carry out instructions of turret officer.
(d) <i>Lower handling room.</i>		
Junior officer.....	Handling room....	In general charge; see hose led out; immersion tanks filled; safety precautions carried out; tongs and trolley in working order; see powder and shell properly placed for handling as instructed by turret officer.

Stations and duties in brief—Continued.

LOADING GROUP—Continued.

Title.	Station.	Duty.
<i>Right side (left side same, except only one talker and one gunner's mate in lower handling room).</i>		
Signalman.....	At signal indicator to upper handling room.	In charge right side; test indicators; see bags put in car, red end aft; put on signal for hoist when car is loaded.
Four outside shell-men.	Man trolleys in handling room.	Receive shells from inside shellman; land on shell table and load in lower car as needed.
Three inside shell-men.	In shell rooms.....	Place tongs on shells and sling them ready for coming out of shell rooms.
Four outside powdermen.	In handling room..	Receive powder from magazines through scuttle in door and load lower car.
Four inside powdermen.	In magazines.....	Remove powder from tanks and pass through powder scuttles in door.
Talker.....	Voice tube to turret.	Transmit orders from turret officer.
Gunner's mate.....	Magazines.....	In charge of magazines.

Loading drill.

Commands.	Procedure.
“Stations”.....	The turret being manned, the crew take stations, maintain silence, and be prepared for the command “load.”
“Load” (the gun having been fired).	
Turret captain.....	Repeat order.
Gun captain.....	Do.
Trainer.....	Keep vertical wire on point of aim or in follow the pointer, keep the red and white pointers together.
Elevating pointer..	Depress guns to loading position (about 2° elevation); turn off gun-laying ready light.
Plugman.....	Turn off ready light; open breech, insert new primer, close plug when gun is loaded.
Trayman.....	Look through bore, wipe off mushroom, call “Foul bore” or “Bore clear.” If foul bore, wait for bore to clear if air is on main line, if not, use auxiliary air line. If no air is on wipe out powder chamber with wet swab. See screw box clear of splinters of unburned powder; put in tray; cut off air.
Signalman upper handling room.	Put signal “hoist” on indicator and turn on safety switch when car is loaded, and all is clear; when car is hoisted signal “lower.”

Loading drill—Continued.

Commands.	Procedure.
Hoist and rammer-man. Carman.....	Hoist car when plug is open and bore reported clear; ram and seat shell; withdraw rammer. Dump first two bags when rammer has been returned and hold dumping handle up.
Trayman.....	See first two bags ready, bags not cock billed, red ends to rear, then ram in by hand. Dump last two bags.
Carman.....	See bags clear for ramming, as above.
Trayman.....	Ram last two bags just inside gas check seat; withdraw rammer.
Trayman.....	Remove tray.
Hoist and rammer-man. Plugman.....	Lower car. Close breech; turn on ready light.
Elevating pointer.....	Lay guns; in director fire turn on gun-laying ready lights.
UPPER HANDLING ROOM.	
Hoistman (lower car). Shellman.....	When signal comes from lower handling room to "hoist," hoist lower car when upper car is on buffers, empty. See that shell is clear when it comes out of lower car, shove shell in upper car and notify signalman when car is clear for hoisting.
Powderman.....	Slide first two bags to signalman, who places them in car. Pass two last bags in front of upper car.
Signalman.....	Place last two bags in upper car and when all is clear signal "hoist."
ELECTRICAL DECK.	
Electrician.....	Observe all switches and note and report to turret officer any gear not working properly.
LOWER HANDLING ROOM.	
Inside shellmen....	Put tongs on shells and slings them ready to pass into handling room.
Outside shellmen....	Run shells on to table and into cars.
Inside powdermen.	Remove covers from powder tanks, pass powder into lower handling room through flap doors.
Outside powdermen.	Receive powder from inside powdermen through scuttle in magazine door, place in car.
Signalman.....	When car is loaded, turn on safety switch and signal "hoist" to upper handling rooms.

NOTE.—Completeness, accuracy, and time of load are to be developed in drill.

455. Service of 14-inch, 50-caliber gun.

THREE-GUN TURRET.

Turret officer.—The turret officer is stationed at left periscope and is in charge of the efficient service of his turret.

At general quarters he reports to control by turning on "Ready light" when turret is completely manned and ready in all respects.

He acknowledges all messages from control by blinking "Ready light."

On receiving order to "Commence firing" the signal is given to all stations over voice tubes. When guns are loaded the order "Target" is given to elevating pointer, and when guns are elevated or "Set," the "Ready light" to control is turned on showing the turret is ready to fire.

Care shall be taken to see that the proper firing switches are closed to the guns that are to fire. Misfires are to be avoided.

The turret officer is a member of the fire-control party and will keep the control officer informed of all interruptions of fire and shall give all information that may be of value in the handling of the ship's batteries.

In the absence of the turret officer his duties are taken over in sequence by the turret junior officer, turret captain, and turret gunner's mates.

DUTIES OF CREW.

TURRET OFFICER'S BOOTH AND TURRET CHAMBER.

Turret captain.—The turret captain is the assistant to the turret officer. His station is at right periscope, but he goes to any place in the turret where his presence is needed. Before battle he will issue six boxes of primers to all gun captains, who will retain one box and serve out the others to his primermen. He must be familiar with turret procedure and with each man's duties; he must be able to conduct all drills when necessary. He must know thoroughly all gear in the turret; must acquaint himself with the history of the turret; must know and keep record of all casualties that have ever occurred in the turret, and must be able to direct the gunner's mates and strikers in upkeep and repairs. He will see that the turret routine is carried out and will never disable the turret for repairs without orders from the turret officer. He will keep the turret log and submit it weekly to the turret officer on Fridays not later than 4 p. m. He must be able to prepare the turret for use, and will see that the guns are always ready to fire. He must be able to bore sight. He must be familiar with the fire-control installation and procedure, and must be able to take full charge of the turret when operating under local control. In case of fire in turret, opens all emergency sprinkling valves and pull "Silence bell" cord.

Messenger.—Mans JD' (JE') phone and repeats all orders received to the turret officer; keeps account of all shots fired. He must be thoroughly familiar with all terms and orders that are likely to be used and will make every effort to keep the turret officer and chief

fire-control officer informed of all that occurs. When the turret is operating under local control he will ring the salvo bells and buzzers. His station is in the center of the booth.

Gun captains.—The gun captain is in direct charge of all the operations of loading his gun and is in command of his gun's crew. He is responsible for the conduct, efficiency, and spirit of the crew who must be made to realize that he is the direct representative of the turret officer and, under the turret captain, in absolute charge of his own gun. He must thoroughly understand the duties of each member of his crew, must be able to instruct new men, and must know what action to take in case of any casualties. On manning the gun he reports to the turret officer when able to load, and will at the same time report absentees and request detail of extra men.

No. 1 gun captain (right gun).—After each shot inspect screw box and gas check seat and sponges mushroom, inspects bore, and reports "Bore clear" or "Foul bore." Places loading tray in screw box; when shell is rammed and rammer drawn back receives first two bags of powder on tray, and rams them in gun clear of screw box; receives the last two bags on tray, making sure the red ends are aft; when the charge is rammed home removes tray, taking care that tray does not strike plug; opens breech-closing valve and touches plug handle to close plug. When plug is closed and locked, steps off platform onto shelf plate and turns on "Ready light." Turns off "Ready light" when gun has been fired. In case no air, closes plug by hand. Provides himself with spare primers and in case of misfire reprimers from shelf plate, using tool provided. If rammer is out of commission, assists in ramming shell by hand, and ramming powder by hand, one bag at a time. If powder hoists are out of commission, receives bags from man under gun, places them on tray, and rams them by hand.

No. 2 gun captain (center gun).—Same duties as No. 1.

No. 3 gun captain (left gun).—Same duties as No. 1.

Powder hoistmen 4, 5, 6.—No. 4 operates right hoist control, hoisting car when hoist signal is on "Hoist" and gun captain signals "Bore clear." When car is up, puts control wheel on "Neutral"; when rammer is clear trips tray allowing first two bags to roll into loading tray, releases bottom tray, trips top tray, releases top tray, trips bottom tray; when last two bags are in loading tray releases bottom tray, steps on car-latch lever and lowers car. Rammer out of commission: Assists in ramming shell by hand. Powder hoist out of commission: Assists plugman in removing car cover, takes station in hoist trunk on top of car, receives bags through powder passing door from upper powder handling room and passes to man under gun.

No. 5 powder hoistman.—Operates hoist of center gun. Duties same as No. 4.

No. 6 powder hoistman.—Operates hoist of left gun. Duties same as No. 4.

Rammer men 7, 8, 9.—The rammer men operate the powder rammer and assist with the hand rammer if necessary, taking the latter from its storage place and getting it behind shell. No. 7 operates right rammer and right rammer-motor controller. No. 9 operates left rammer controller. In case one rammer motor breaks down, shift to other motor. No. 7 and No. 9 operate the controllers, and gunner's mates for right and left guns shift clutches as necessary. Ram shell when tray is entered and "Bore clear" is given. When shell is rammed home withdraw rammer to rear end of spanning tray, ram powder when last two bags are in tray, ramming charge just inside of gas check seat; withdraw rammer and signal for transfer tray to be lowered. When tray is lowered roll shell from transfer tray into rammer tray. Shell must invariably be seated hard, but powder will be rammed just inside of gas check seat, care being used not to strike the bags against the shell with too much force. Shell shall not be rammed with powder charge interposed between base of shell and head of rammer.

No. 8 Rammer man (center gun).—Duties same as No. 7 except he does not handle rammer motor controller.

No. 9 Rammer man (left gun).—Duties same as No. 7.

Transfer tray men 10, 11, 12.—No. 10, 11, and 12, in rear of shell table; operates transfer tray latch, lowering or raising transfer tray on signal from rammer man; assists in rolling shell on table. Rammer out of commission, assists with hand rammer.

Shellmen 13, 14, 15.—Gunner's mates stationed in rear of each gun to watch operation of all gear and shift clutches. Operates shell shutter in right and left gun chambers and roll shell to center gun.

Shellmen 16, 17.—At auxiliary shell hoist. Assist where needed in turret. In case of breakdown of shell hoist, man tackle for hoisting shell through tube hoist.

Cradle men 18, 19.—No. 18 operates shell cradle for right shell hoist, dumping shell as required. If right shell joist is out of commission, mans the right auxiliary hoist drum, hoisting shell by auxiliary hoist. If all power off turret, mans Mark XII shell hoist. Right rammer out of commission, assists in ramming shell by hand. Mans voice tube to shell-handling room.

No. 19 cradlemen (left gun).—Duties same as No. 18 except they are for left gun.

Plugman 20, 21, 22.—No. 20 plugman, right gun: Under breech of gun, opens plug, locks plug in open position, primes, unlocks plug when tray is removed, and stands clear of recoil. Misfire: Opens lock with tool provided, picks up extracted primer and hands it to gun captain; closes lock when reprimed. Powder hoist out of

commission: Assists in removing car cover, receives bag from man in trunk, and passes them to gun captain on loading platform.

No. 21 plugman (center gun).—Duties same as No. 20.

No. 22 plugman (left gun).—Duties same as No. 20.

Trainers 23, 24, 25.—Trains turret. Sees turret on zero or 180°, and turret train indicator set at zero or 180° as soon as station is manned. When shifting sides, shift target-turret indicator. When ordered, follows target-turret indicator as quickly as possible until target is designated, then keeps vertical wire on until ordered to shift targets. If sights jar out calls, "Mark" until correct elevating pointer's sight is determined.

Firing pointers 26, 27, 28.—Mans firing key at pointer's station. When master key fire is used, closes key from "Stand-by" to end of firing signal, and in pointer fire, closes key during firing signal when he wishes to fire. Should be trained to either firing pointer or trainer. Watches "Ready" lights; if necessary, notifies elevating pointers when former are on. If cross lines do not check with elevating pointer, calls out "Check sight setting." When sights are correctly set, the telescope whose vertical wire checks with trainers is assumed to be correct.

Elevating pointers 26, 27, 28.—Elevates when ready lights are on or when word "Target" is received from booth; points or lays them to proper director setting (calling "Set" to booth in latter case) and brings guns to loading position after each shot. For pointer fire or master key calls, "Mark" when cross lines are on, before each shot, if possible. In charge of pointers and sight setters and gives orders for shifting from one side to the other. Operates clutch for shifting to hand elevating gear. Reports "Ready" when target indicator is set, gear tested, and turret on zero, or 180°.

Sight setters 29, 30, 31.—Mans JD (JE) phone and sets sights. Checks ranges received over phone with visual, after sights are set. In case of discrepancy calls, "Check visual." Formally, sets by telephone and checks by visual. Relief firing pointer. Repeats director angles received over telephone and visual to elevating pointer.

UPPER POWDER HANDLING ROOM.

Petty officer in charge.—In center, forward of powder tray. In charge of powder crew. Will test gear and report to booth if there are any absentees, requesting detail of extra men, and report to booth when ready. Will see that powder is distributed properly from lower hoists to upper hoists, four bags to each upper hoist; and that bags are put in upper hoist, *red end aft*. Will see that safety precautions are observed. At "Silence" will take station at sprinkler valve and be ready to turn it on if necessary. Have powder men

Nos. 36, 37, and 40 go to hand training room when called to man hand training gear. Have hand passing platform when manned if powder hoists are out of commission.

Hoist man No. 32.—Operates left lower hoist controller. Operates hoist on signal from lower handling room. As bags roll out of hoist, he passes them on tray to powder men 34 and 36; first, third, fifth, and sixth bags to 36, *red end outboard*; second and fourth bags to 34, *red end inboard*. Left hoist motor car out of commission: Throw in clutch to connect left hoist with hand gear. Hand passing: Receive bags from 34 and pass to 48. Mans voice tube to lower handling room and booth.

Hoist man No. 33.—No. 33 operates right lower hoist controller; operates hoist on signal from lower handling room. As bags roll out of hoist he passes them on tray to powder men Nos. 35 and 37 at right and center hoists; first and third bags to center, *red end inboard*; and second, fourth, fifth, and sixth bags to right hoist, *red end outboard*. Right hoist motor out of commission: Throw in clutch to connect right hoist with hand gear. Hand passing: Receive bags from 35 and pass to 39. Mans voice tube to lower handling room and booth.

Powder men Nos. 34 and 35.—Nos. 34 and 35: Forward side of powder tray in center; receive bag from hoist men and pass them to 40. Hand passing: Opens powder passing hatch; receive bags from man on ninth platform and pass them on tray to powder men.

Powder men Nos. 36, 37, 38, 39, 40, 41, 42.—No. 36 at forward end of left upper hoist; receives bags from hoist man; passes first bag to 38; shoves second bag in car; passes third bag to 38; shoves fourth bag in car. Hand passing: Takes station on ninth platform; receives bag from man on eighth platform and passes to powder man in upper handling room. Mans hand gear in training room when called.

No. 37 at forward end of right upper hoist; receives bags from hoistman; passes first bag to 39, holds second bag ready to shove in car. When car is down and first two bags are in, passes third bag to 39 and shoves fourth bag in car. Hand passing: Takes station on seventh platform; receives bags from man on sixth platform and passes them to man on eighth platform. Mans hand gear in training room when called.

No. 38 at after end of left upper hoist. Duties same as 39.

No. 39 at after end of right upper hoist; receives first bag. When car is down shoves bag in car. When first two bags are in car trips top tray, allowing bags to drop into lower tray; releases top tray; receives third bag and shoves it into car. When fourth bag is in, puts signal on "Hoist" and releases control safety latch. All bags to go in *red end aft*. Hand passing: Ships bracket in hoist trunk; stands on powder tray; receives bags from hoistman and passes through door to powderman, on top of car. Mans voice tube to top of hoist.

No. 40 at forward end of center upper hoist; receives bags from 34 and 35; passes first bag to 41; shoves second bag in car; passes third bag to 41; shoves fourth bag in car. Hand passing: Takes station on eighth platform; receives bag from man on seventh platform, and passes to man on ninth platform. Mans hand gear in training room when called.

No. 41 at after end of center upper hoist. Duties same as 39.

No. 42 in turning gear room. Stands by to shift clutches for shifting to auxiliary or hand power.

Electrician.—Provides electrical spares in both turret and shell-handling room. After seeing all switches closed and auxiliary lighting tested, stands by on electrical deck.

SHELL-HANDLING ROOM.

Shell captains Nos. 43 and 44.—No. 43 in charge of right shell-handling room crew, at right shell tube; assists in placing shell in tube. Sees gear in working order and reports "Ready" to booth when crew is present and tube is filled with shell. Provides two sharp knives to cut shell lashing and sees that grommets and lashings are not thrown so they will jam turret in training. Has shell brought up from lower circle and lower handling room during lulls in firing, first obtaining permission from the booth. Has hoist motor started at order "Stations," but sees that it does not run unnecessarily. At the order "Silence" stands by to turn shell-sprinkling valve on in case fire starts in shell-handling room. Provides two crowbars for clearing jams of shell or fragments against turret. Mans voice tube to top of hoist.

No. 44 in charge of left shell-handling room crews. Duties same as No. 43.

Shell hoistmen Nos. 45 and 46.—No. 45 operates right shell hoist; starts motor and operates hoist, watching automatic danger signal and hoisting every time "Hoist" is fully shown and the shell is in the bottom of the tube. Attaches auxiliary shell hoist whip to shell in case of breakdown of hoist. Mans voice tube to machinery deck.

No. 46 operates left shell hoist. Duties same as No. 45. Mans voice tube to booth and lower handling room.

Winchmen Nos. 47 and 48.—Man parbuckle drums. No. 47 parbuckles shell into hoist from stowage for right shell hoist. Hoists shell from lower handling room when necessary if turret is trained fore and aft; otherwise assists with shell purchase.

No. 48 parbuckles shell into hoist from stowage for left shell hoist. Other duties same as No. 47.

Shellmen Nos. 49, 50, 51, 52, 53, and 54.—Nos. 49, 51, 53 are right shell crew; handle parbuckles and steady shell from stowage, and place in right shell hoist tube. Replace shell from stowage in shell-

handling room with shell from circle deck stowage when time permits. Assist with shell purchases or tackle when hoisting shell from lower circle or lower handling room. Nos. 49 and 51 man hand gear in turning gear room when called. Nos. 50, 52, and 54 are left shell crew. Duties same as right crew. Nos. 50 and 52 man the hand gear in turning gear room when called.

LOWER HANDLING ROOM AND MAGAZINES.

Junior turret officer.—In charge of ammunition supply. Responsible for efficient supply of powder and shell, and rigid adherence to “Safety orders.” Be prepared to take over duties of turret officer in his absence.

Gunner's mate.—In the absence of junior turret officer, has supervision of the entire powder supply. In direct charge of magazine crew. Makes necessary repairs to powder hoists. Sees magazine safety precautions carried out and in case of fire in handling room floods magazine. Sees gear always in working order and scuttle flaps tight. When ordered, has 4 bags ready for each gun and 6 bags in each hoist, and 12 in magazine before reporting “Ready” to the booth. Keeps up a continuous supply of powder. When powder has been sent from upper powder handling rooms after each shot, the hoistmen signal “Hoist” on the telegraphs and start the hoists. “Hoist” on the telegraph will be the signal to start the passing of powder out of magazines. When the powder is up, the hoistmen signals “Stop” on the telegraphs and stops hoists, “Stop” being the signal to stop passing powder from the magazines. Powder that can not be put into the hoists or on the tray will be returned to the magazines. Gunner's mate provides tools and spares, and sees cloth and sewing material on hand for making repairs to torn powder bags. Keeps full supply of wrenches in magazines for opening powder tanks.

Messenger 83.—Mans voice tube to officer's booth and shell-handling room.

Handling-room powder men.—Even numbers are right crew, odd numbers left crew.

Powdermen 55 and 56.—Stationed in front of loading tray; receive bags from powder men and roll into conveyor, taking care bags are entered square to avoid jams.

Nos. 57 and 58 stationed at side of conveyor; man voice tubes and “Hoist” telegraphs.

Nos. 63 and 64 at after magazine scuttle; give signal to magazines to pass out powder; receive first bag, carry it and place it in hoist, *red end inboard*. Hand passing: Receive first bag out of each door and pass it to first platform.

Nos. 61 and 62 receive second bag out of after door and place it on tray, *red end outboard*. Hand passing: Receive second bag out of each door and pass it to first platform.

Nos. 59 and 60 receive third bag out of afterdoor and place it in right hoist, *red end inboard*. Hand passing: Receive third bag out of each door and pass it to first platform.

Nos. 69 and 70 give signal to magazine to pass out powder; receive first bag out of forward door and place it in right hoist, *red end outboard*. Hand passing: Take station on sixth platform; receive bags from fifth and pass to seventh platform.

Nos. 67 and 68 receive second bag out of forward door and place it in right hoist, *red end outboard*. Hand passing: Take station on fifth platform; receive bags from fourth and pass to sixth platform.

Nos. 65 and 66 receive third bag out of forward door and place it in right hoist, *red end outboard*. Hand passing: Take station on fourth platform; take bags from third platform and pass to fifth platform. If "Silence" bell rings, mans starboard fire hose.

Magazine powdermen.—Remove powder from tanks and pass it into handling room on signal. *In any one magazine not more than six bags shall ever be out of the tanks at one time*; that will be three bags in each passageway. Not more than two covers to full tanks shall be removed, and not more than four additional covers shall be loosened. All assist in closing flap when "Silence" bell is heard.

Nos. 71 and 72 in charge of afterpassage; magazine, at scuttle; receive powder, place it on tray, and pass it into handling room on signal.

Nos. 73 and 74 in afterpassage, magazine; remove powder from tanks and assist in placing it on tray and shoving it into handling room.

Nos. 75 and 76 in afterpassage, in magazine; open tanks and assist in carrying powder from tanks to scuttle.

Nos. 77 and 78 in charge of forward passage; in magazine. Duties same as Nos. 73 and 74.

Nos. 79 and 80 in forward passage, in magazines. Duties same as Nos. 73 and 74.

Nos. 81 and 82 in forward passage, in magazine. Duties same as Nos. 75 and 77.

456. Service of 16-inch, 45-caliber guns.

Two gun turrets.

STANDARD TURRET CALLS.

1. Turret officer's booth.....	"Booth."
2. Right gun.....	"Right gun."
3. Left gun.....	"Left gun."
4. Pointer station, right gun.....	"Right pointer."
5. Pointer station, left gun.....	"Left pointer."

6. Trainer's station, right gun.....	"Right trainer."
7. Trainer's station, left gun.....	"Left trainer."
8. Upper powder-handling room.....	"Powder."
9. Shell-handling room.....	"Shell."
10. Lower handling room.....	"Handling room."
11. Turning gear room.....	"Turning gear."
12. Electric platform.....	"Electric."
13. Ex-caliber guns.....	"Ex-caliber."

Turret officer.—The turret officer is stationed at left periscope and is in charge of the efficient service of his turret.

At general quarters he reports to control by turning on "Ready light" when turret is completely manned and ready in all respects.

He acknowledges all messages from control by blinking "Ready light."

On receiving order to "Commence firing" the signal is given to all stations over voice tubes. When guns are loaded the order "Target" is given to elevating pointer and when guns are elevated or "Set" the "Ready light" to control is turned on showing the turret is ready to fire.

Care shall be taken to see that the proper firing switches are closed to the guns that are to fire. Misfires are to be avoided.

The turret officer is a member of the fire control and will keep the control officer informed of all interruptions of fire and shall give all information that may be of value in the handling of the ship's batteries.

In event of group control the turret officer mans the directorscope, and the turret captain takes over the duties of the turret officer.

In the absence of the turret officer his duties are taken over in sequence by the turret junior officer, turret captain, and turret gunner's mates.

DUTIES OF CREW.

TURRET OFFICER'S BOOTH AND TURRET CHAMBER.

Turret captain.—The turret captain is the assistant to the turret officer. His station is at right periscope, but goes to any place in the turret where his presence is needed. Before battle he will issue six boxes of primers to all gun captains, who will retain one box and serve out the others to his primer men. He must be familiar with turret procedure and with each man's duties; he must be able to conduct all drills when necessary. He must know thoroughly all gear in the turret; must acquaint himself with the history of the turret; must know and keep record of all casualties that have ever

occurred in the turret, and must be able to direct the gunner's mates and strikers in upkeep and repairs. He will see that the turret routine is carried out and will never disable the turret without orders from the turret officer. He will keep the turret log and submit it weekly to the turret officer on Fridays not later than 4 p. m. He must be able to prepare the turret for use, and will see that the guns are always ready to fire. He must be able to bore sight. He must be familiar with the fire-control installation and procedure, and must be able to take full charge of the turret when operating under local control. In case of fire in turret opens all emergency sprinkling valves and pull "Silence bell" cord.

Telephone talker.—1. Mans JD' (JE') phone and repeats all orders received to the turret officer; keeps account of all shots fired. He must be thoroughly familiar with all terms and orders that are likely to be used and will make every effort to keep the turret officer and chief fire-control officer informed of all that occurs. When the turret is operating under local control he will ring the salvo bells and buzzers. His station is in the center of the booth.

Voice-tube talker 2.—Mans voice tubes in booth.

Gunner's mates 3 and 4.—No. 3 is stationed outboard of right gun; No. 4 outboard of left gun. Watch operation of all gear.

Gun captains 5 and 6.—The gun captain is in direct charge of all the operation of loading his gun and is in command of his gun's crew. He is responsible for the conduct, efficiency, and spirit of the crew, who must be made to realize that he is the direct representative of the turret officer and, under the turret captain, in absolute charge of his own gun. He must thoroughly understand the duties of each member of his crew, must be able to instruct new men, and must know what action to take in case of any casualties. On manning the gun reports to the turret officer when able to load, and will at the same time report absentees and request detail of extra men.

No. 5 gun captain (right gun).—After each shot inspect screw box and gas check seat and sponges mushroom, inspects bore and reports "Bore clear" or "Foul bore." Lowers spanning tray when shell is rammed and rammer drawn back, receives first bag of powder on tray, and shoves it forward on tray; divides next two bags, one forward, one aft; receives the last two bags on tray. The red ends of all bags must be aft. When charge is rammed home raises spanning tray, taking care that tray does not strike plug, opens breech closing valve and touches plug handle to close plug. When plug is closed and locked, steps off platform onto shell plate and turns on "ready light." Turns off "ready light" when gun has been fired. In case no air, closes plug by hand. Provides himself with spare

primers and in case of misfire reprimers from shelf plate, using tool provided. If rammer is out of commission assists in ramming shell by hand, ramming powder by hand, one bag at a time. Powder hoists out of commission, lands bags from whip on the tray and rams them by hand.

No. 6 gun captain (left gun).—Same duties as No. 5.

Trayman, 7 and 8.—Stationed outboard of spanning tray on shelf plate. Assist gun captains in handling spanning tray and powder on tray. If rammer is out of commission assist in ramming shell and powder by hand.

Hoistmen 9 and 10.—No. 9 operates right hoist control, hoisting car when hoist signal is on "Hoist" and gun captain signal "Bore clear." When car is up puts control wheel on "Neutral." When rammer is clear opens door and as gun captain and trayman roll out bags; operates air connection on handwheel to bring powder bags into position. When last two bags are out, closes door and lowers car.

Rammer out of commission: Assists in ramming shell by hand. Powder hoist out of commission: Assists primerman in handling whip in gun pit.

No. 10 operates hoist for left gun. Duties same as No. 9.

Rammermen 11 and 12.—The rammerman operates the powder rammer and assists with the hand rammer if necessary, taking the latter from its stowage place and getting it behind shell. No. 11 operates the right rammer and No. 12 the left rammer. In case one motor breaks down the other is started after switches are thrown on rammer motor panel in hand-gear room. No. 11 and No. 12 operate the controllers, shifting clutches as necessary for controlling rammer for other gun. Ram shell when spanning tray is in place and shell on tray. When shell is rammed home withdraw rammer rear end of spanning tray, ram powder when last two bags are in tray, ramming charge just inside of gas check seat; withdraw rammer. Shell must be seated hard, but powder will be rammed just inside of gas check seat, care being used not to strike bags against the shell. Shell shall not be rammed with powder charge interposed between base of shell and head of rammer.

Cradlemen 13 and 14.—No. 13 operates shell cradle for right shell hoist, dumping shell as required. If right shell hoist is out of commission, mans the right auxiliary hoist drum, hoisting shell by auxiliary hoist. If all power is off turret, mans differential purchase.

Right rammer out of commission, assists in ramming shell by hand. Mans voice tube to shell handling room.

No. 14 operates shell cradle for left shell hoist. Duties same as No. 13.

Shellmen 15, 16, 17, and 18.—No. 15 and No. 17 stationed on shell table, right gun. Receive shells from cradle and roll them along

shell table to rammer. Shell hoist out of commission, assist No. 13 at auxiliary hoist. Rammer out of commission assist in ramming shell by hand.

No. 16 and No. 18 stationed at left gun. Duties same as No. 15 and No. 17.

Primeren 19 and 20.—No. 19 stationed in gun pit, right gun. Primes when plug is opened and stands clear of recoil. Misfire, opens lock with tool provided, picks up extracted primer and hands it to gun captain. Closes lock when reprimed. Powder hoist out of commission, receives bags through door leading to upper powder handling room, and assisted by No. 9 hoists bags to tray.

No. 20 stationed under breech of left gun. Duties same as No. 19.

Trainers 21 and 22.—No. 21 at trainer's station under right gun, No. 22 under left gun; trains turret. When ordered follows train indicator as quickly as possible. If sights jar out, calls "Mark" until correct elevating pointer's sight is determined.

Pointers 23 and 24.—No. 23 at pointer's station under right gun; No. 24 under left gun. Elevates when ready lights are on or when word "Target" is received from booth, and lays guns to proper elevation, following elevation indicator. Closes firing key from "Stand-by" to end of firing signal if "on" with elevation indicator. In case of failure of Selsyn system, lays guns to proper angle of elevation (calling "Set" to booth) and closes firing key during firing signal. In pointer fire closes key during firing signal when he wishes to fire. Brings gun to loading position after each shot. Operates clutch for shifting to hand elevating gear. Reports ready to booth when stations are manned.

Sight setters 25 and 26.—No. 25 at sights of right gun, No. 26 at sights of left gun. Mans JD (JE) phone and sets sights. Check ranges received over phone with visual after sights are set. In case of discrepancy calls to sub, "Check visual." Normally sets by telephone and checks by visual.

Relief pointer: In case of failure of Selsyn system "Marks" to pointer when gun is laid to correct director angle.

UPPER POWDER HANDLING ROOM.

Petty officer in charge 27.—In center forward of hoists. In charge of powder crew. Tests gear and reports to booth if there are any absentees, requesting detail of extra men, and reports to booth when ready. Sees that powder is distributed properly from lower hoists to upper hoists, and that bags are put in upper hoist, *red end aft*. Sees that safety precautions are observed. At "Silence" will take station at sprinkler valve and will be ready to turn it on if necessary.

Sends powdermen No. 30 and No. 31 to hand-training room when called to man hand-training gear. If powder hoists are out of commission stations crew to pass powder into gun pit.

Hoistman No. 28.—Operates left lower hoist controller on signal from lower handling room. As bags roll out of hoist he passes them on tray to powdermen No. 30 and No. 32, *red end aft*. Left hoist motor out of commission: Throw in clutch to connect left hoist with hand gear. Hand passing: Opens door to powder trunk, receives bag and passes to powderman No. 30.

Hoistmen No. 29.—Operates right lower hoist controller. Duties same as No. 28.

Powdermen 30, 31, 32 and 33.—No. 30 and No. 31 outboard of powder tray. Receive bags from hoistmen (No. 28 and No. 29) and pass them to powdermen No. 32 and 33 who are stationed outboard of upper hoist. No. 32 and No. 33 load upper powder hoist and signal when ready to hoist. Hand passing: No. 30 and No. 31 receive bags from No. 28 and No. 29 and pass them to No. 32 and No. 33, who pass the bags through the door into the gun pit.

NOTE.—After the guns are loaded, 5 bags of powder will be placed in each upper hoist car, ready for hoisting. Not more than 10 bags of powder, 5 for each conveyor, will be in the lower powder-handling room ready to be sent up to the upper handling room.

SHELL-HANDLING ROOM.

Shell captains 34 and 35.—No. 35 in charge of right shell-handling room crew, at right shell tube; assists in placing shell in tube. Sees gear in working order and reports "Ready" to booth when crew is present and tube is filled with shell. Provides two sharp knives to cut shell lashing and sees that grommets and lashings are not thrown so they will jam turret in training. Has shell brought up from lower handling room during lulls in firing, first obtaining permission from the booth. Has hoist motor started at order "Stations" but sees that it does not run unnecessarily. At the order "Silence" stands by to turn shell-sprinkling valve on in case fire starts in shell-handling room. Provides two crowbars for clearing jams of shell or fragments against turret. Mans voice tube to top of hoist.

No. 34 in charge of left shell-handling room crew. Duties same as No. 35.

Shell hoistmen 36 and 37.—No. 37 operates right shell hoist; starts motor and operates hoist, watching automatic danger signal and hoisting every time "Hoist" is fully shown and that the shell is in the bottom of the tube. Attaches auxiliary shell-hoist whip to shell in case of breakdown of hoist. Mans voice tube to machinery deck.

No. 36 operates left shell hoist. Duties same as No. 37. Mans voice tube to booth and lower handling room.

Winchmen 38 and 39.—Man parbuckle drums. No. 39 parbuckles shell into hoist from stowage from right shell-hoist. Hoists shell from lower handling room when necessary if turret is trained fore and aft, otherwise assists with shell purchase.

No. 38 parbuckles shell into hoist from stowage for shell-hoist. Other duties same as No. 39.

Shellmen Nos. 40, 41, 42, 43, 44 and 45.—Nos. 41, 43, and 45 are right shell crew; handle parbuckles and steady shell from stowage, and place in right shell-hoist tube. Replace shell from stowage in shell handling room with shell from circle deck stowage when time permits. Assist with shell purchases or tackle when hoisting shell from lower circle or lower handling room. Nos. 41 and 43 man hand gear in turning gear room when called. Nos. 40, 42 and 44 are left shell crew. Duties same as right crew. Nos. 40 and 42 man the hand gear in turning gear room when called.

LOWER HANDLING ROOM AND MAGAZINES.

ELECTRICAL DECK.

Junior turret officer.—In charge of ammunition supply. Responsible for efficient supply of powder and shell and rigid adherence to "Safety orders." Be prepared to take over duties of turret officer in his absence.

Electricians.—Provide electrical spares in both turret and shell handling room. After seeing all switches closed and auxiliary lighting tested stand by on electrical deck.

Gunner's mate 46.—In the absence of junior turret officer has supervision of the entire powder supply. In direct charge of magazine crew. Makes necessary repairs to powder hoists. Sees magazine safety precautions carried out and in case of fire in handling room floods magazine. Sees gear always in working order. When ordered 4 bags for each gun and 6 bags in each hoist, and 12 bags ready in magazine before reporting "Ready" to the booth. Keeps up a continuous supply of powder. When powder has been sent from upper powder-handling rooms after each shot, the hoistment signal "Hoist" on the telegraph will be the signal to start the passing of powder out of magazines. When the powder is up, the hoistment signal "Stop" on the telegraphs and stop hoists, "Stop" being the signal to stop passing powder from the magazines. Powder that can not be put into the hoists or on the tray will be returned to the magazines. Gunner's mate provides tools and spares and sees cloth and sewing material on hand for making repairs to torn powder bags. Keeps full supply of wrenches in magazines for opening powder tanks.

Messenger 47.—Mans voice tube to officer's booth and shell-handling room.

Handling-room powdermen.—Odd numbers are right crew, even numbers left crew.

Outside powdermen 48, 49, 50, 51, 52, and 53.—No. 50 and No. 51 are stationed in front of loading tray, receive bags and load them into conveyor, taking care that bags are entered squarely to avoid jams and with *red end aft*. Man voice tubes and "Hoist" telegraphs.

No. 48, No. 49, No. 52, and No. 53 are stationed along powder tray and pass bags to No. 50 and No. 51.

Hand passing: Man whip and hoist bags to upper powder handling room.

Outside powdermen 54, 55, 56, 57, 58, 59, 60, 61, 62, and 63.—Pass bags from scuttles to powder tray.

Scuttle operators 64, 65, 66, and 67.—Operate powder scuttles.

Inside powdermen 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, and 79.—Stationed inside magazines. Remove powder from tanks, pass along powder trav, and load into powder scuttles on signal from handling room. *In any one magazine not more than 6 bags shall be out of the tanks at one time.*

The covers on not more than two full tanks shall be removed and not more than five additional covers shall be loosened.

No. 68, No. 69, No. 78 and No. 79 in charge at scuttles, and load bags into scuttles.

NOTE.—The following applies to 9-B (turret No. 4).

Outside powdermen 54, 55, 56, 57, 58, 59, 60, 61, 62, and 63—Stationed on first platform. Receive powder from magazines and pass into powder scuttles leading to lower handling room.

Scuttle operators 64, 65, 66, and 67.—Operate powder scuttles from magazines on first platform.

Inside powdermen 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, and 79.—Stationed inside magazines. Duties same as for inside powdermen, Turrets No. 1, No. 2, and No. 3.

457 Service of 14-inch, 45-caliber guns.—

Two gun turrets.—The general duties of the crew and the procedure for this turret is the same as for the 14-inch, 45-caliber, three-gun turret, except that the specific duties of the crew at the order "Load" are as noted below.

TURRET

No. 1 plugman.—Opens plug, sponges mushroom, primes.

No. 7 second loader (outboard in gun chamber).—Takes position on loading platform. Assists plugman in opening plug and examines

plug tray for extracted primer. Assists first loader to place platform tray in screw box.

No. 8 first loader (inboard in gun chamber).—Takes position on loading platform. Places platform tray in screw box. Examines bore and reports "Clear bore" or "Foul bore." Turns off air.

No. 3 trayman.—Places standing tray on platform tray. Assists powder rammerman with powder rammer.

No. 6 second shellman.—Trips dump tray while loading trays are being put in position and guides shell into rammer tray. Latches up dump tray.

No. 2 rammerman.—Operates power rammer control when certain trays are in proper position and rams shell into gun. When shell has seated and has extended until friction clutch slips, withdraws power rammer.

Nos. 9 and 10, first and second powdermen.—On hearing the report "Clear bore" the first powderman trips safety latch on flame proof flaps and the first two bags of powder are shot out of bin on tray under the gun. Both powdermen then pass bags, beackets up, simultaneously to the first and second loaders, who place them on tray, where they are rammed home by the powder rammerman, assisted by the trayman. The first and second powderman then pass up the remaining two bags of the load as described above, where they are rammed home when in place on the tray.

No. 3 trayman.—Places standing tray in upright position upon completion of ramming of powder charge.

Nos. 7 and 8, first and second loaders.—Remove platform tray from gun upon completion of ramming powder charge. Assist plugman in closing of plug and jump clear of loading platform. (Plugman see operating lever lanyard in place.)

No. 5 first shellman.—When dump tray is latched, and power rammer withdrawn from gun, dumps shell on dump tray. Signals hoistman to lower car, and trips carrier latch. When car is landed in upper shellroom, signals "Hoist."

UPPER SHELL SUPPLY.

Right (or left, upper hoistman).—Lowers car when signal "lower" is received from turret. Hoists car when shell is in carrier of car and trolley and transportation eyes are clear and annunciator is on "hoist."

Trolleyman.—Overhauls pulley of transportation trolley to land shell in hoist car. Hauls transportation trolley to vicinity of lower hoist or bin. Hauls next shell to proper height when hooked on differential pulley of transportation trolley.

First shellman.—Guides shell into carrier of hoist car. Unhooks transportation trolley and unships transportation eye when nose of

shell is seated in hoist car and guard chain of upper hoist is latched. Trips bale of carrier clear so shell will seat in hoist car. Returns transportation eye to lower handling room. Hooks transportation trolley to next shell. Assists trolleyman to hoist next shell to proper height.

Second shellman.—Unhooks guard chain of upper hoist. Assists first shellman to guide shell into hoist car. Hooks guard chain of hoist. Unhooks next shell from lower hoist as soon as weight is taken by transportation trolley. Unships one transportation eye and gives it to bin shellman.

Bin shellman.—Hooks bin trolley to shell. Hoists shell on bin trolley. Carries shell by bin trolley to position for hooking to transportation trolley. Receives transportation eye from second shellman whenever shell from bin is hooked on transportation trolley.

Lower hoistman.—Tends voice tubes. Operates lower hoist controller to hoist shell on signal from lower handling room.

Cable tender.—Guides cables of upper hoist to see that cables are kept clear whenever upper hoist is operated.

NOTE.—It should be made the general practice to take shells from lower shell supply as long as this method is rapid enough. The upper shell room stowage should be used only when necessary.

LOWER SHELL SUPPLY CREW.

Trolleyman.—Guides trolley from inside shell room door to hoist, operating switch to guide trolley to proper track. Eases away on pulley to transfer shell to hoist. Returns trolley to shell room when lower hoist has shell.

First shellman.—Guides shell from shell room to hoist. Hooks shell to lower hoist, using distant control. Closes gate. Operates signal to lower hoistman, when shell is hooked on.

Second shellman.—Guides shell to hoist, assisting first shellman. Collects transportation eyes dropped from upper shell room.

NOTE—Each outside shell crew feeds its nearest hoist.

SHELL-ROOM CREW.

There shall be a crew of three men in each of the two shell rooms. Each crew shall be organized as follows:

Trolleyman.—Operates inside shell trolley. Assists in hoisting shell from storage. Eases away on differential purchase of inside trolley when shell is being transferred to outer transportation trolley. Transfers inside trolley with assistance of second shellman when shells from one row of stowage are expended.

First shellman.—Hooks inside purchase to transportation eye in base of shell. Hoists shell from stowage. Hooks outside transpor-

tation trolley to shell. Takes strain on outside differential pulley when transferring shell from one pulley to other. Hoists shell on outside trolley to proper height for clearing door combing.

Second shellman.—Receives transportation eyes from outside shellman. Ships two transportation eyes in next shell to be hoisted. Assists in hoisting shell from storage. Unhooks inside trolley hook from shell when outside trolley has weight of shell.

NOTE:—There are four inside trolleys, two forward and two aft in each shell room. Inside shell crews shall work alternately forward and aft in step with outside transportation trolleys. In working a row of shells, care will be taken to see that it is never necessary to shift two forward or two after trolleys at the same time. The pairs of trolleys in one half the shell room should be so worked that one row being taken from always contains at least two shells more than any other.

UPPER POWDER SUPPLY CREW.

Hoistman.—Runs the power conveyor and has charge of upper powder room.

First powder passers.—Take alternate powder bags as they come up in hoist so that when a charge is completely up the right and left side will each have four bags. Pass the bags to second powder man.

Second powder passer.—Passes powder bags along tray to third powder passer.

Third powder passer.—Passes powder bags along tray to fourth powder passer.

Fourth powder passer.—Receives bags and turns them on end so that the becket can be reached by the powder bin men. Helps pass four bags of powder to powder bin after each salvo.

First powder bin man.—In powder bin next to powder room chute. Assisted by second bin man he gets up four bags for each salvo and places same horizontally on inclined tray to gun.

Second powder bin man.—In powder bin next to flame proof door to gun. First and second bin men push out the next charge in room as the flame proof door to gun is tripped after "Clear bore." As soon as the charge is out of the bin first bin man opens flame proof trap to powder room and both bin men get up a charge of four bags for the next salvo.

POWDER SUPPLY.

LOWER HANDLING ROOM.

Officer or chief petty officer.—In charge of lower handling room. Directs supply in general with regard to fire and casualties to the powder hoist.

Conveyor loader.—Takes bags from powder passers and places same squarely and carefully in the conveyor. Trips circuit breaker to hoist in case a bag gets foul.

Voice tube man.—Receives orders and information from turret officer's booth and upper powder room.

Powderman (4).—Stands at chute and guides powder out to give to powder passers.

Powder passers.—Take one bag each and carry it to conveyor to give to conveyor loader. Drop powder bags in immersion tanks in case of fire.

Hand passers.—Stationed on powder passing platforms to pass powder in case of a casualty to powder conveyor. Drop powder bags in immersion tanks in case of fire.

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Powder tank opener.—Opens four tanks for next charge. Loosens covers to four tanks for the following charge. Only one charge of powder to be exposed at one time in magazine by the chutes.

First powderman.—Assists tank opener—removes powder carefully and gives same to powder passers.

Powder passers.—Take powder after removal from tanks and place same by chute.

Second powderman.—Pass out ready powder immediately after a salvo has been fired.

PART V

NOTES ON HANDLING MEN

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HANDLING MEN.

Importance of proper handling of men.—Of far greater importance to officers than any material or tools committed to their charge is the personnel with which they are concerned. The morale and training of the men have always been more important factors in winning battles than the characteristics of the ships or of the weapons employed. Success in training and in the cultivation of morale depends to a very considerable degree on skill in handling men.

Self-training on the part of officers.—It is not fair to the ship or to the men under the control of an officer to make them bear the brunt of personal deficiencies existing because of a neglect of self-training on the part of the officer. If satisfactory results in a command do not appear to be forthcoming, the officer should make a study of himself, his methods, bearing, and attitude. The cause of the difficulty may in this way be discovered.

Force of example.—Men in the aggregate will take just as much interest in their duties, and will work just as much as the officers who are placed over them. Example appeals strongly to men, and officers must bear in mind that their bearing, manner, and language in dealing with seniors, as well as juniors, are copied by their subordinates. An officer must at all times set a high example of industry, zeal, initiative, and punctuality, as well as in neatness of dress and correctness of bearing, in order to promote the morale of his command.

Criticism of superiors.—Hostile criticism of authority will ruin any military organization and completely destroy unity of action. A subordinate is seldom in a position to be competent to judge of the actions of his superiors, and should not begin or permit hostile criticism. Destructive criticism, which is sometimes thoughtlessly started in officers' messes, is contagious and soon spreads through the ship and kills ship spirit. Cooperation is essential on the part of all hands. Each individual must yield unqualified support to authority, and must assure himself that his own part in the task is thoroughly accomplished, and accomplished in a way which will best assist others who are working toward the same end. This is a fundamental of discipline and is essential to success in any organization where many men are employed.

First attributes of an officer.—Knowledge of his profession, consideration of others, good manners, coolness, and self-control are the first attributes of an officer, and are more important in dealing with juniors than with seniors. Leadership is an essential. Leadership

is fundamentally based on proved superiority. The officer must be first in everything at all times.

Importance of understanding individuals.—An essential professional study for officers is a study of the peculiarities, abilities, weaknesses, character, etc., of the individuals composing their command.

Methods of handling men.—Praise will usually better promote interest and efficiency than censure or punishment. Be strict but considerate of the limitations of others. Remember that you are dealing with individuals as sensitive and jealous of their rights as yourself. Fairness and impartiality in dealing with men are essentials. Little good and often great evil is accomplished by unnecessary shouting. Nothing is more discouraging to an individual than the finding of fault with him when he is using his best endeavors.

Importance of interesting men in work.—No one objects to useful work. Interest your men in what they are doing. In so far as it is practicable, each individual employed in a task should have a full knowledge of the result which it is desired to attain. At drill, when teaching certain details, explain why these details are necessary. Point out the difficulties and the accepted methods of overcoming them. Use records of past performances in developing interest.

Suggestions from crew.—Never disregard, but welcome, suggestions from petty officers and men. Give consideration to all suggestions, and if they are not practicable explain why they are not. Such an attitude on the part of an officer will always help to promote and encourage a personal interest in their work on the part of the crew, and frequently useful ideas will be offered.

Seizing opportunities.—Take full advantage of opportunities as they are presented. The best organization is one in which subordinate leaders are given specific tasks, for the accomplishment of which they are given the necessary authority and for which they are held rigidly responsible. The leader must organize his forces and arrange his program, assigning specific tasks to the subdivisions of his command, and having done this must take full advantage of every opportunity that occurs to so modify his program as to advance the completion of his work. Facilities, conveniences, and opportunities are seldom the best, but full advantage must be taken of such as are available.

Petty officers.—Petty officers are indispensable assistants. They must be educated to realize and to exercise their responsibilities. The same loyal support may be expected from them that you give to your superiors. Endeavor to handle the junior ratings of your division through their own petty officers, and train your junior ratings to obtain information and instruction from the petty officers of their own division.

Smartness and cleanliness essential.—A division that is smart in infantry, boat, and other drills will be smart in gunnery. Cleanliness of uniform, person, and of ship are essential to efficiency.

Competition.—Competition should be stimulated by all legitimate means. Arouse a desire to beat your own ship's past performances. Analyze and post all records and scores in order to arouse and hold interest of the men.

At quarters and drills.—At quarters officers must set an example in military form and manners and the divisions will imitate them. Men must not be held at "attention" longer than necessary; but when the command is "attention," it must be complied with.

Particular care with young men.—Many young men have been discharged as undesirable or with bad-conduct discharges who might have been saved to the Navy had they had more official interest and encouragement bestowed on them by their division officers. Young recruits who are inclined to be shiftless require forethought on the part of the division officer to keep them from delinquencies. When a man shows signs of improvement he should be encouraged by commendation.

Commendation, censure, and reports.—Commendations should be given in the presence of others, and when merited should be prompt. Censure should not be public. Reports of a trifling nature are undesirable. A man should never be placed on the report unless there is ample and good reason for believing that he has intentionally committed an offense deserving of punishment.

Comforts of men.—The physical comfort of the men must be given careful attention. The successful ship is a happy ship, and the men must feel that their ship is their home. The Navy owes every man reasonable comfort in a place to eat, to sleep, and to spend his leisure time. Details, often trifling, in controlling the uniform, berthing, messing, and living arrangements may greatly contribute to the welfare and contentment of the crew. It is an essential part of an officer's duty to care for such details. On Saturdays, Sundays, and holidays, and after working hours, recreation for the divisions, such as sailing parties, swimming parties, and the like, should be initiated by the division officers.

PRINCIPLES OF TRAINING.

Training for war the first principle.—A primary consideration in training is that war is likely to occur with but little warning, and that the closer the training exercises in time of peace resemble the conditions to be expected in battle the fewer will be the derangements and the smaller will be the disturbing influence of danger and of these derangements on the performance of the crew in battle.

Training more important than material.—Unless the naval officer in time of peace devotes continuous thought and study to the all-important feature of his profession—making the most out of his command, whatever it may be—he can not be prepared for the duties that will come to him in war. In times of peace it is not unusual for other matters, such as features of administration, material, and design, to occupy first place in the minds of those who may be called upon in war to use weapons and ships. Preparation for war can not be adequately accomplished after hostilities have begun, and unless his training has been correct and sufficient, an officer, when called upon for a demonstration of his proficiency in war, will find himself unequal to the task. Success in battle will depend to a far greater degree on the spirit and morale of the personnel, and on the training and ability of all to coordinate their efforts, than any features of administration or material. The correct bearing and zealous efforts of every officer are directly reflected in the interest and enthusiasm with which the crew carries on the hard work necessary on their part. The necessity for retaining the interest of the men is sometimes not fully appreciated. A ship in which the men have a knowledge, interest, and pride in their work is always a successful and a happy ship. This condition can be attained only by intelligent and cheerful zeal on the part of all officers.

Character of system.—Systematic and progressive gunnery training begins with the selection of the units of the gun crews, followed by the training necessary to render each expert in his individual duties. The gun crew must then be perfected as a team, and when this is accomplished the training must develop the offensive power of the ship's battery as a whole, and finally efficiency in the collective fire of the batteries of more than one ship.

Utilization of the spirit of competition.—The natural desire of one man to excel another in any test of skill is an incentive to thorough training that may be regarded as an essential stimulus to any real success. However complete may be the system or the apparatus, or however diligent and faithful the officer, unless the desire to excel is excited maximum results can not be attained. This desire to excel should be fostered and utilized in daily drills by pitting individuals and crews against one another and by comparing their records with their own past performances. Care must be taken to avoid all questionable or unfair methods of comparisons.

Final purpose of training.—The final purpose of all gunnery training, battle efficiency, must be kept always in view. Comparison of, and competition between, units is but a means to that end. What is desired is a state of efficiency which will enable a vessel to make a good gunnery performance under any circumstances and not only under the peculiar conditions of a particular problem.

Uniformity in methods is essential.—Efficiency can not be attained if young and inexperienced officers are permitted to change approved methods at their discretion.

Permanence in stations.—The skill of the ship in gunnery depends directly upon the skill of each officer and man in his individual duties. Neither officers nor men can reach their maximum skill if they are frequently shifted from one station to another. Members of crews should, however, be exercised in stations other than those they habitually fill, in order that casualties to personnel may not silence the fire, and that familiarity with the duties of others may be acquired and realization of their responsibilities of others may be fully recognized.

Casualties.—Any training for battle that does not prepare for and fully anticipate casualties to both personnel and material is incomplete. In preparing for casualties no methods or devices should be allowed that would not be practicable in action. Many casualties probable in battle can not be ordered at the times of target practice without introducing an element of danger that is not justified by the results to be obtained. Proficiency in handling such casualties must be attained by exercises held at times other than during target practice.

The employment of observers from own ship and other ships is desirable for the purpose of collecting data, analyzing performances, detecting faults in methods and procedure, exchanging ideas, and discovering violations of accepted procedure.

PART VI

SHIP MANUALS

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SHIP MANUALS.

QUARTERS FOR MUSTER AND INSPECTION.

501. The calls.—

(1) *Officers' call (call No. 7).*—This is to be sounded five minutes before the routine time for quarters, taken up and repeated by all the buglers at the bugle stations. At this call officers and men will gather in the vicinity of the *division parades*.

(2) *Assembly (call No. 8).*—This is to be sounded at the routine time for quarters, taken up and repeated by all the buglers at the bugle stations.

502. *Division parades.*—Each division should be assigned a parade—a space on deck for its habitual formation. The fair weather parades are on the uncovered decks. The foul weather parades are on the covered decks. The assignment of division parades should be such that men have only one parade and one formation for all events. Gunnery department divisions should be so assigned that one side of the ship balances the other side of the ship, in order that the divisions will appear properly disposed on going in and out of port. All other departments than the gunnery department should have deck space assigned them fulfilling two requirements: (1) That the divisions (or crews) of the department form contiguously, and (2) that those departments of the ship's company present a well-balanced formation going in or out of port.

503. *The band.*—The band should be paraded on the quarter deck, and at order of executive officer will play a march. After all departments and division officers have reported the executive officer will direct that a march be played for the officers to march to their stations.

504. Duties of officers.—

(1) *Heads of departments.*—Each head of department will command his own department at quarters for muster, and will report his department to the executive. Where the navigating officer takes the deck his department should be reported to him by his next in rank in his own department, and the report then made by the navigating officer to the executive.

(2) *Division officers.*—Division officers and crew leaders normally will report their divisions and crews to their own head of department.

505. Department formation.—As far as possible, departments will form with all divisions facing to *starboard*. On going in and out of port all divisions shall be formed facing *outboard*.

506. Posts of officers and petty officers.—(a) The post of the gunnery officer should be on the starboard side of the ship, as near equidistant as may be from all the divisions of his department. The posts of the other heads of departments are in front and center of their divisions.

(b) The post of the division officer is in front and center of his division.

(c) The post of the division junior officer is in rear of center of his division.

(d) The post of the division leading petty officer is on the right of the section leading petty officer of the first section.

(e) The posts of the section leading petty officers are on the right of the front rank of their sections.

(f) The posts of the other chief petty officers are in rear of their own sections, in line of file closers.

(g) The squad leaders occupy the right file of the front rank of their squads.

(h) Other petty officers take posts in the front rank of their own sections, from right to left in order of seniority.

(i) Seamen and firemen, first class, in the front rank.

507. To form the division.—All divisions will form in two ranks; the right wing composed of the first and third sections of the watch bill; the left wing composed of the second and fourth sections of the watch bill.

(1) At the sounding of *assembly* the division leading petty officer in front of and facing the center of the division commands **FALL IN**; at which the watch sections form with the section leading petty officers on the right of the front rank of their sections.

(2) The division leading petty officer commands **MUSTER THE SECTIONS**; at which each section petty officer takes one step to the front, faces to the left, and musters his section. Each faces to the front when his muster is completed.

(3) The division leading petty officer then commands 1. *Section leaders to the front and center*; at which the section leaders face toward center; 2. **MARCH**; at which section leaders march to center and face to front.

(4) The division leading petty officer then commands **REPORT**; the section leaders report in succession from the right.

NOTE.—Section leaders do not salute the division leading petty officers.

(5) The division leading petty officer then commands 1. *Posts*; at which the first and third section leaders face right, the second section leader faces about, and the fourth section leader faces to left;

2. MARCH; at which the section leaders take their posts; each on the right of front rank of his own section.

(6) The division leading petty officer then places himself, facing to left, one pace on the right of the front rank of the division and commands 1. *Right*; 2. DRESS; dresses the division, and commands 3. FRONT.

(7) The division leading petty officer then moves to the front and center, and facing the division officer salutes and reports *Sir*, —.

(8) The division officer returns the salute and commands 1. *Post*; and the division leading petty officer takes his post on the right of the front rank of the division. [See par. (9aa).]

(9a) For inspection by the division officer: The division officer commands FORM FOR INSPECTION. The division junior officer, placing himself on the right of the front rank facing to left, commands 1. *Open ranks*; at which the division leading petty officer drops to the rear a sufficient distance (governed by the deck space) to form the alignment for the rear rank; 2. MARCH; at which the rear rank steps back to its alignment on the division leading petty officer; both ranks dress to the right. The division junior officer aligns both ranks, places himself on the right of the front rank facing to the left and commands 3. FRONT; at which the division leading petty officer resumes his post. The division junior officer then proceeds to front and center, faces the division and commands 1. *Hand*; 2. SALUTE; at which the division executes the right-hand salute. The division junior officer then faces about and saluting the division officer, reports *Sir, the division is ready for inspection*. The division officer returns the salute and commands *Post, Sir*, and the division junior officer takes post to left and rear of division officer. The division officer then commands *Two*; at which the men drop right hands to side.

(9b) The division officer, accompanied by the division junior officer, proceeds to inspect his division, passing from the right to the left along the front rank, and from the left to the right along the rear rank.

(9c) The inspection completed, the division officer commands to the division junior officer *Take charge, Sir*, and proceeds to the front of his head of department; and, at parade rest, awaits the head of department's order to REPORT.

(9d) The division junior officer places himself in front of center and commands 1. *Close ranks*; 2. MARCH; 3 *Parade*; 4 REST; faces about and takes the position of parade rest. [See par. (10).]

(9aa) Should there be no inspection of the division to follow the procedure given in paragraph (8), the division officer commands *Take charge, Sir*, and proceeds to report to his head of department as in (9c). The division junior officer proceeds to bring the division to the parade rest as in (9d).

(10) Upon return of the division officer to his division he relieves the division junior officer, who takes his post in rear of center, and the division officer then proceeds to carry out the routine.

508. Succession in the division.—In the absence of the division officer his prescribed duties in the division formation are taken by the division junior officer; and the duties prescribed for the division junior officer are taken by the division leading petty officer in addition to his own.

509. Formation of small divisions, or crews.—In the case of those departments whose divisions are small units, the procedure given in article 507 should be abridged as required.

510. Formation after "secure."—After *secure* from every drill or exercise, the divisions will assemble in the above formation. The division leading petty officer on the right flank of the division, facing left, will command **FALL IN**; 1. *Right*; 2. **DRESS**; 3. **FRONT**; 1. *Parade*; 2. *REST*; and, resuming his post, comes to the parade rest. The division thus awaits the call *retreat*.

511. Inspections.—

(1) *By the head of the department.*—When the head of department inspects the divisions of his department each division officer places himself on the flank of the front rank from which the head of department approaches, and presents the division with the command 1. *Hand*; 2. **SALUTE**; 3. *Two*; and accompanies the head of department on his inspection of the division.

(2) *By the commanding officer.*—The same formalities are to be observed as in paragraph (1). The head of department will accompany the commanding officer when the commanding officer inspects the divisions of his department.

NOTE.—The front rank is not to be faced about as a matter of routine, unless required for some particular occasion.

GENERAL MUSTER.

512. Formation.—

(1) At the call (No. 64), heads of departments command, *Division officers take charge*. Heads of departments then form in rear of the captain in order of seniority from right to left, at parade rest. Each division officer marches his division to its designated place in the massed formation; and, taking post on the right or left flank of the division as will bring him nearest to the captain, commands 1. *Parade*; 2. *REST*; and takes the position of parade rest. The division junior officer, at parade rest, takes post in rear of division officer.

513. Ceremony.—

(1) When all the divisions are massed the executive commands to the bugler *Sound attention*; to the ship's company 1. *Hand*; 2. **SALUTE**; faces about, salutes, and reports to the captain *Sir, all hands*

are mustered. The captain returns the salute and commands *Publish the orders, Sir.* The executive faces about and commands 3. Two; at which the men drop the hands.

(2) The executive commands 1. *Attention to orders;* or 1. *Articles for the Government of the United States Navy*, as the case may be; 2. *Parade;* 3. *REST;* and publishes the orders in hand.

(3) The orders published, the executive commands to the bugler *Sound attention;* faces about, salutes, and reports to the captain, *Sir, the orders are published.* The captain returns the salute and commands *Pipe down, Sir, or Carry on, Sir*, as the case may be.

(4) The executive faces about and commands to the bugler *Sound the assembly;* division officers then march the divisions to the division parades, and the heads of departments resume command of their departments.

THE GUARD OF THE DAY.

(When seamen are on guard duty.)

514. The officer of the guard.—The officer of the guard occupies a position below decks analogous to that occupied by the officer of the deck above decks. He is subordinate to the officer of the deck, whose commands he must obey, but he receives his general orders from the executive, to whom he reports directly. He has, both above and below decks, immediate command over all that relates to the interior discipline of the ship, and he has general charge of the prisoners. Below decks he is responsible for the lower decks routine.

515. The chief petty officer of the guard.—The responsibilities of the chief master-at-arms are given in A. G. N., article 8, and the Regulations. He is the chief petty officer of the guard. He is subordinate to the officer of the guard. The petty officers and men of the guard are subordinate to him.

516. Lower deck petty officers.—Gunnery department and engineering department divisions will detail petty officers in charge of the cleaning and discipline of their lower deck compartments and spaces. In matters of discipline, cleaning and care and preservation these lower deck petty officers receive their orders from their own division officers. In matters of police duty and lower decks routine they receive their orders from the officer of the guard through the chief master-at-arms.

517. Strength of the guard.—

(1) In battle ships, armored cruisers and cruisers of the first class the *guard of the day* shall consist of—

(a) One officer of the guard.

(b) One chief petty officer of the guard (the chief master-at-arms).

- (c) Four petty officers of the guard.
- (d) Twenty-four men of the guard.
- (2) Other types of ships will not be required to provide for a guard of the day in their organizations.

518. The rosters.—(a) Junior officers serve on *roster* (a), which is kept by the executive.

(b) Chief petty officers of the gunnery department divisions may serve on *roster* (b), which is kept by the gunnery officer.

(c) Petty officers, first, second, and third classes, of the gunnery department divisions serve on *roster* (c), which rosters are kept by the division officers.

(d) Seamen and ordinary seamen serve on *roster* (d), which rosters are kept under the direction of the division officers.

519. Details and tours.—All guard details come from the section on duty for the day. Every morning before quarters the chief master-at-arms shall report to the division officers the petty officers and men of the guard that are to be furnished for the next day; and the division officer, at quarters, will have the details notified, and will cause a list of his details to be furnished to the chief master-at-arms. The tour of guard duty is 24 hours. The tour of a petty officer of the guard, an orderly or sentinel on post is 2 hours.

520. Posts of sentinels.—The strength of the standard guard permits six posts. Where the posts are less than six the guard may be organized into more than four reliefs; in which case petty officers additional to four will be required in the guard detail. Where the posts number more than six, additional men of the guard will be required in the detail, so as not to reduce the guard below four reliefs. The captain regulates the number of posts.

521. Uniform and arms of the officer of the guard and of the guard.—

(1) *In port:*

Officer of the guard—

- (a) Uniform of the day, with leggings.
- (b) Sword and gloves.

Men—

- (a) Uniform of the day, with leggings.
- (b) Equipment, service rifle belt.
- (c) Arms, service rifle; with or without ammunition, as ordered.

(2) *At sea:*

Officer of the guard and men of the guard—

- (a) Uniform of the day, without leggings.
- (b) Equipment, service pistol belt.
- (c) Arms, service pistol as ordered; with or without ammunition, as ordered.

(3) The chief master-at-arms is exempted from wearing arms and equipment, and from guard mount and all formations.

(4) The division officers are responsible as to the uniform of their details which report for guard duty, and that their details are fit for duty.

522. The commander of the guard.—

(1) The officer of the guard is the commander of the guard, and is responsible for its instruction and discipline. He will see that all its members are correctly instructed in their orders and duties, and that they understand and properly perform them. He receives and obeys the orders of the commanding (executive) officer and the officer of the deck, and reports to the latter without delay all orders, relating to the guard not given or transmitted by the officer of the deck; he transmits to his successor all information relating to his duties.

(2) He will inspect his guard at sunset, and will then perfect its orders and dispositions for the night.

(3) He will inspect the reliefs at 8 a. m. and at 8 p. m. and at other times ordered. He will see that the reliefs are posted every two hours, excepting the dinner and supper reliefs, which are to be posted at 12.30 p. m. and not later than 6.30 p. m.

(4) He will question his petty officers and sentinels relating to the instructions they may have received from the *old* guard; he will see that patrols and visits of inspection are made as directed by the executive officer.

(5) He will see that the orders of each sentinel and orderly are bulletined on each post.

(6) Should a member of the guard be incapacitated from any cause he will call upon the man's division officer for a relief. He will enter in the guard report a record of his tour of duty, and, on the completion of his tour, will present it to the executive officer. He will inspect the brig spaces and cells at least once during his tour of duty, and at such other times as he may deem necessary. He will require the chief master-at-arms to report to him after each meal that all meals sent to the brigs are, in quantity and quality, in accordance with regulations.

(7) Before guard mount he will report to the officer of the deck the names of all men undergoing punishment whose terms of confinement expire that day.

(8) Before guard mount the *old* and the *new* officer of the guard will together inspect and visit the posts.

(9) The *new* officer of the guard will receipt to the *old* officer of the guard, in the guard report, for the articles under charge of the guard. After guard mount both officers of the guard report to the executive. On presenting themselves both salute. The *old*

officer of the guard, standing on the right of the *new*, presenting the guard report, says, *Sir, I report as the old officer of the guard.* As soon as the executive officer notifies the *old* officer of the guard that he is relieved, the *new* officer of the guard says, *Sir, I report as the new officer of the guard*, and then receives his instructions.

523. The chief petty officer of the guard.—

(1) Before guard mount he will prepare triplicate lists of all the petty officers and men of the guard, showing the assignments to reliefs and the number of the relief. The petty officers will be assigned to reliefs in order of seniority, so that the senior is the petty officer of the first relief, and so on. One list will be handed as soon as practicable to the officer of the guard. The other two lists will be separated into reliefs, and these furnished in duplicate to the petty officers of the guard, who will report to the chief master-at-arms immediately after breakfast for them. The "first relief" goes on post at guard mount till 10 a. m.; then is followed in regular order by the second, third, and fourth reliefs. He will see that the petty officers of the guard thoroughly understand, and are prompt and efficient in the discharge of their duties.

(2) After morning quarters he will proceed to the executive's office and obtain the guard report.

(3) He will report to the officer of the guard all delinquencies among any men whatever that come under his notice.

(4) Under the direction of the officer of the guard he will see that the compartment division petty officers carry out the lower decks routine and the general messmen's routine.

(5) He is responsible that the special orders for the petty officers of the guard, and for the sentinels and orderlies, are bulletinized where designated by the executive officer; and that the copies are up-to-date as to changes that may from time to time be ordered in such special orders. He is responsible that authenticated copies of all special orders are posted in the guard report.

524. Petty officers of the guard.—

(1) Petty officers of the guard are assigned to reliefs by the chief petty officer of the guard (the chief master-at-arms).

(2) A petty officer of the guard receives and obeys orders from none but petty officers of the guard senior to himself, the chief petty officer of the guard, the officer of the guard, the officer of the deck and the commanding (executive) officer.

(3) It is the duty of the petty officer of the guard to post and relieve sentinels, and to instruct the members of his relief in their orders and duties.

(4) Immediately after the petty officers receive the lists of their reliefs from the chief master-at-arms they will assign the men of their respective reliefs to posts by number, and a man so assigned

to a post will not be changed to another post during the same tour of guard duty, unless by orders of the officer of the guard.

(5) Each petty officer will then enter on his lists the assignments of the men to posts, and will return one copy to the chief master-at-arms, retaining the other for his own use.

525. General duties of petty officer of the guard on post.—

(1) The petty officer of the guard whose relief is on post generally will remain accessible to the officer of the deck, although his post extends throughout the ship.

(2) He will thoroughly acquaint himself with all the special orders of every orderly and sentinel on his relief, and will see that each sentinel correctly transmits such orders in detail to his successor.

(3) He will see that each sentinel and orderly on being posted clearly understands the limits and extent of his post.

(4) When the ship is at anchor he will exercise supervision over all ship's gangways, and will report to the officer of the deck shore boats coming alongside. He will see that no property is passed over the gangway unless authorized.

(5) He will inspect the orderlies and sentinels every half hour.

(6) He will at once report to the officer of the guard any unbecoming conduct on the part of a sentinel or orderly on post.

(7) He will at once report to the officer of the deck any violation of regulations or any unusual occurrence reported to him by a sentinel, or, coming to his notice in any other way, will arrest the offender and bring him to the officer of the deck.

(8) Each petty officer of the guard is responsible for turning out the men of his own relief for the night watches, and he will wake the petty officer whose relief is next on post in time for the latter to form his relief and post it promptly.

(9) Should the guard be turned out during the night watches each petty officer will call the men of his own relief, and cause his men to fall in promptly.

(10) The petty officers of the guard will acquaint themselves with the billets of the men of their own reliefs. The guard should be billeted together.

(11) The petty officer of the guard will salute all officers, whether by day or night.

(12) The petty officers of the guard will not remove their accoutrements or clothing during their tour of guard duty, and will not absent themselves from the vicinity of the guard headquarters except for meals and for short, necessary absences.

526. Men of the guard—

(1) Men of the guard will not remove their accoutrements or clothing during their tour of guard duty, and will not absent themselves from the guard headquarters except on permission from their own petty officer.

(2) During his tour of guard duty a man is subject to the orders of the commanding (executive) officer, the officer of the deck, the officer and petty officers of the guard only.

(3) Men are assigned to reliefs by the chief petty officer of the guard (the chief master-at-arms), and to posts by the petty officer of the relief. They will not change from one post or relief to another during their tour of duty unless so ordered by the officer of the guard.

(4) Men of the guard supernumerary to those required for the regularly established posts are available for such temporary and special posts that may be required, for shore patrol or beach guard duty. When a ship becomes due for shore patrol or beach guard duty, the strength of the guard for that day should be temporarily augmented for the duty.

527. Orders for sentinels and orderlies on post.—Orders for men on post are divided into two classes, *general orders* and *special orders*. All men liable for guard duty will be required to memorize the following:

GENERAL ORDERS.

My general orders are:

(1) To take charge of this post and all Government property in view.

(2) To walk my post in a military manner, keeping on my feet and constantly alert, observing everything that takes place within sight or hearing.

(3) To report all violations of orders or regulations that I am instructed to enforce.

(4) To quit my post only when properly relieved.

(5) To receive, transmit, and obey all orders from, and to allow myself to be relieved by the commanding (executive) officer, officer of the deck, officer of the guard, or a petty officer, of the guard.

(6) To talk to no one except in line of duty. To read nothing on post except my general and special orders.

(7) To learn my special orders.

(8) In case of fire or disorder to give the alarm.

(9) To salute all officers, passing boats carrying officers, and passing ships of war.

(10) To be especially watchful at night.

(11) In any case not covered by instructions to call the petty officer of the guard.

GUARD MOUNTING.

528. Guard mounting will be held on the parade, or at such place as the commanding officer may direct, of the organization from which the guard is detailed.

529. At assembly the detail for the guard falls in on the parade. The chief petty officer verifies the detail, inspects their dress and general appearance, and replaces any man unfit to march on guard. He then turns the detail over to the commander of the guard and retires.

530. At adjutant's call, the officer of the day takes his place in front of the center of the guard and commands:

1. *Officer (or officers) and petty officers;* 2. *Front and center;* 3. *MARCH;* whereupon the officers and petty officers, take their positions, are assigned and sent to their posts as prescribed in article 2224, "Landing Force Manual."

531. The officer of the day will then inspect the guard with especial reference to its fitness for the duty for which it is detailed, and will select as prescribed by ship's organization the necessary orderlies and sentries. The men found unfit for guard will be relieved and will be replaced by others found to be suitable, if available in the organization. If none are available in the organization the fact will be reported to the adjutant immediately after guard mounting.

532. When the inspection shall have been completed, the officer of the day resumes his position and directs the commander of the guard to march the guard to its post.

RELIEVING THE OLD GUARD.

533. As the new guard approaches the parade of the old guard or such place as has been assigned for the old guard, the old guard is formed in line with the music 3 paces to its right; and the commander of the new guard commands: 1. *Eyes,* 2. *RIGHT;* the commander of the old guard commands: 1. *Present;* 2. *ARMS;* commanders of both guards salute. The new guard marches in quick time past the old guard.

534. When the commander of the new guard is opposite the music of the old guard, he commands: *Front;* the commander of the old guard commands: 1. *Order;* 2. *ARMS,* as soon as the new guard shall have cleared the old guard.

535. The music having marched 3 paces beyond the music of the old guard, changes direction to the right, and, followed by the guard, changes direction to the left when on line with the old guard; the changes of direction are without command. The commander of the guard halts on line of the front rank of the old guard, allows his guard to march past him, and when its rear approaches him forms it in line to the left, establishes the left guide 3 paces to the right of the music of the old guard, and on line with the front rank,

and then dresses his guard to the left; the music of the new guard is 3 paces to the right of its front rank.

536. The new guard being dressed, the commander of each guard, in front of, and facing its center, commands: 1. *Present*; 2. *ARMS*; and resumes his front, salutes, carries sword, faces his guard, and commands: 1. *Order*; 2. *ARMS*.

537. Should a guard be commanded by a petty officer he stands on the right or left flank, according as he commands the old or new guard, and executes the rifle salute.

538. After the new guard arrives at its post, and has saluted the old guard, each guard is presented by its commander to its officer of the day; if there be but one officer of the day present, or if one officer acts in the capacity of old and new officer of the day, each guard is presented to him by its commander.

539. If other persons entitled to a salute approach, each commander of the guard will bring his own guard to attention, if not already at attention. The senior commander of the two guards will then command: 1. *Old and new guard*; 2. *Present*; 3. *ARMS*.

540. The junior officer of the guard will salute at the command *Present arms*, given by the senior. After the salute has been acknowledged the senior will bring both guards to the order.

541. After the salutes have been acknowledged by the officers of the day, each guard is brought to the order by its commander; the commander of the new guard then directs the orderly or orderlies to fall out and report, and causes bayonets to be fixed if so ordered by the commanding officer.

542. The commander of the guard then divides the guard into three reliefs, *first*, *second*, and *third*, from right to left, and directs a list of the guard to be made out by reliefs.

543. The sentinels of the old guard are at once relieved by members of the new guard, the two guards standing at ease or at rest while these changes are being made. The commander of the old guard transmits to the commander of the new all his orders, instructions, and information concerning the guard and its duties.

544. The sentinels of the old guard having been relieved, take post on the left of the old guard. The old commander of the guard then inspects the arms of his guard and causes the detachment to be marched to its parade and dismissed.

545. In bad weather or when the guard is small the music may be dispensed with.

546. General instructions.—

(1) At quarters for muster in fair weather, the guard of the day falls in at the point where the guard assembles for rendering side honors. In foul weather the guard of the day falls in at the guard chest.

(2) At all emergency drills the guard of the day assembles as above.

(3) At division drills and exercises the guard is dismissed to the divisions on the drill call; the relief on posts is relieved by the chief master-at-arms and the designated drill reliefs.

(4) At battle drills the guard answers the battle drill calls directly; the relief on posts being relieved by the petty officer of the guard, and by him dismissed to the divisions.

(5) On the retreat from drills and exercises the guard call is to be sounded, the guard assembled, the posts reestablished, and the relief posted.

547. Detailed instructions.—See Landing Force and Small Arms Instructions, 1920, Chapter II, which, where not modified and abridged in the foregoing, should govern guard duty.

PART VII.

PHYSICAL EXERCISES.

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PHYSICAL EXERCISES.

PHYSICAL ACTIVITY EXERCISES.

601. In addition to the physical exercises prescribed as standard for all the personnel in the Navy, so-called "activity exercises" for officers are necessary. The mere perfunctory performances of certain bodily movements can not produce physical fitness. It has been shown during the World War that men performing duties which are not of an outside or physically active nature require special exercises to develop the abdomen and maintain the liver, kidneys, and organs in good condition.

602. All officers are urged to daily take some special form of "activity exercise" which will prevent taking on excessive flesh and tend to keep all organs of the body in good condition. Such movements as the so-called "Daily dozen" and other movements designed to be used in the morning or at night are highly recommended. It is considered that these are essential in addition to all other physical exercises which may be taken. And when no opportunity permits of getting athletic exercises aboard ship, such as in a destroyer or submarine service, it is imperative that all personnel take some form of "daily activity exercise."

603. It is believed that young officers and especially those who have had the perfect physical training at the Naval Academy deteriorate physically more quickly than is to be expected. This is believed to be particularly due to a lack of attention paid to the "activity upkeep" of the body and lack of participation in outdoor sports such as walking, swimming, tennis, golf, soccer, football, shooting, fishing, and other similar diversions which are presented in one or more forms throughout the service.

BAYONET EXERCISE.

NOTE.—This drill is considered to be valuable as preliminary training for exercises laid down in "Landing Force Instructions, 1921."

604. To take intervals or distance.—Intervals or distances are taken as prescribed in the drill regulations.

605. The guard.—(1) Intervals or distances having been taken, and the squad being at the *order*, bayonets fixed, the instructor

commands: 1. *Bayonet exercise*, 2. GUARD. At the first command, pieces are brought to the *port*; at the second command, half face to the right, carry back and place the right foot about twice its length to the rear, the hollow of the right foot in the rear of the left heel, the feet at a little less than a right angle, the right toe pointing to the right, both knees slightly bent, body erect on the hips, the weight thrown a little more on the right leg than on the left; at the same time throw the point of the bayonet to the front, at the height of the chin, barrel to the left, the small of the stock directly in front of the center of the body below the belt, the left hand below the sight with the thumb along the barrel, both arms free from the body, without constraint (pl. 12).



Plate 12. The guard.

(2) Being at guard: 1. *Order*, 2. ARMS. Resume the *order* as from *charge bayonet*.

606. The steps.—(1) ADVANCE: Move the left foot quickly forward 8 inches; follow with the right foot the same distance.

(2) RETIRE: Move the right foot quickly to the rear 8 inches; follow with the left foot the same distance.

(3) 1. *Step right*, 2. STEP: Move the right foot quickly to the right 8 inches; follow with the left foot to its relative position in front.

(4) 1. *Step left*, 2. STEP: Move the left foot quickly to the left 8 inches; follow with the right foot to its relative position in rear.

(5) 1. *Front*, 2. DOUBLE: Advance the right foot quickly 8 inches in front of the left, keeping the right toe to the right; then advance the left foot to its relative position in front.

(6) 1. *Rear*, 2. *DOUBLE* Carry the left foot quickly 8 inches to the rear of the right; then place the right foot in its relative position in rear.

607. The facings.—(1) 1. *Face right* (or *left*), 2. *FACE* At the first command, bring the piece quickly to the *port*; at the second command, face to the right, turning on the ball of the left foot, at the same time carry the right foot quickly to its relative position in rear and resume the *guard* (pl. 13).



Plate 13.
Facings. First position.



Plate 14.
Right low parry.



Plate 15.
Left low parry.

(2) 1. *Right (or left) about*, 2. *FACE*. Similarly executed, facing about on the ball of the left foot.

(3) The foregoing movements are first executed without arms, hands on hips, fingers to the front, thumbs to the rear, elbows pressed back.

608. The parries.—(1) In the preliminary drills, after the *parries* and *thrusts*, the position of *guard* is resumed, by the command, *GUARD!* after each movement.

(2) 1. *Right (or left)*, 2. *PARRY*: Move the point of the bayonet quickly about 6 inches to the right.

(3) 1. *Right low*, 2. **PARRY**: Raise the butt outside the right forearm, the right hand at the height of the breast; at the same time describe a semicircle from left to right with the point of the bayonet until it is at the height of, and a little to the right of, the right knee; barrel to the left (pl. 14).

(4) 1. *Left low*, 2. **PARRY**: Lower the point of the bayonet, describing a semicircle, and carry it to the left at the height of, and a little to the left of, the left knee; barrel to the left, the right hand opposite the left breast (pl. 15).

(5) 1. *High*, 2. **PARRY**: Raise the piece quickly with both hands, the right hand 3 inches in front of, and 4 inches above, the head; the barrel down and supported between the thumb and forefinger

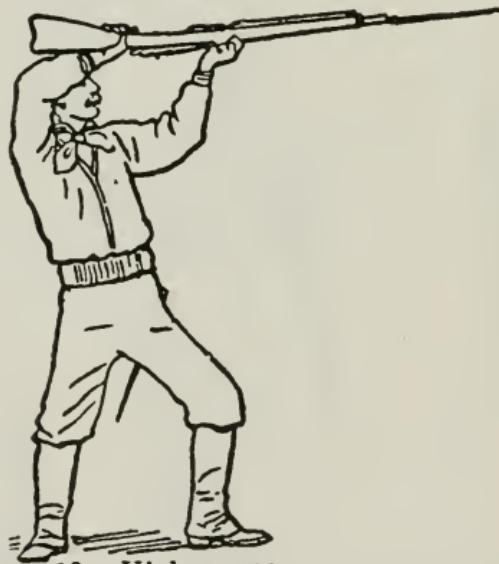


Plate 16. High parry.

of the left hand above the sight, the piece directed to the front with the point of the bayonet opposite the left shoulder; at the same time bend both knees slightly more than in the position of *guard* (pl. 16).

(6) 1. *High right* (or *left*), 2. **PARRY**: Executed in the same manner as the *high parry*, except that the left shoulder is advanced, and the point of the bayonet directed to the right (pl. 17).

(7) In the different *parries* the pieces should be so held as to cover the point attacked. When the men have become proficient, they will be instructed to resume the *guard* without command.

609. The thrusts.—(1) 1. *Straight*, 2. **THRUST**: Carry the upper part of the body forward, advance the right shoulder, straighten the right leg, and bend the left knee; at the same time thrust

the piece directly to the front to the full length of the right arm, slipping it through the left hand, barrel up, the bayonet and the butt at height of the chin (pl. 18).

(2) The *straight thrust* should be executed frequently in order to strengthen the wrist. It may be executed directly from the *guard*, or from the *right* and *left parries*, and the *guard* should be resumed promptly to keep control of the piece. In *thrusting*, the

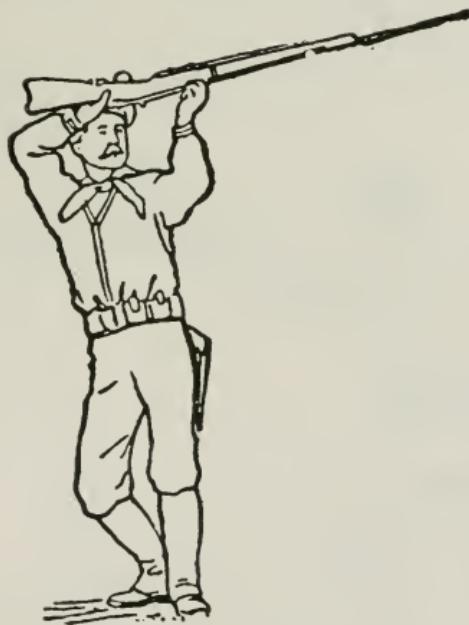


Plate 17. High left parry.

piece must be held so as to cover the point most exposed to the enemy's attack.

(3) The *thrusts* from the different *parries* are made with the right leg always straightened, and the body carried forward as in the *straight thrust*.

(4) 1. *Right* (or *left*), 2. **PARRY**, 3. **THRUST**, 4. **GUARD**. Execute the *straight thrust*.

(5) 1. *Right low*, 2. **PARRY**, 3. **THRUST**, 4. **GUARD**. Thrust to the full extent of the left arm, barrel to the left, bayonet at the height of the waist, right hand at the height of the breast, keeping the left hand fast, stock outside the right forearm (pl. 19).

(6) 1. *Left low*, 2. **PARRY**, 3. **THRUST**, 4. **GUARD**. Thrust to the full extent of the left arm, barrel to the left, bayonet at the height of the waist, right hand at the height of the breast, keeping the left hand fast, stock outside the right forearm.

(7) 1. *High* (or *High right*, or *High left*), 2. **PARRY**, 3. **THRUST**, 4. **GUARD**. Thrust in the designated direction to the full extent of the left arm, barrel down, right hand above, and in front of, the head, keeping the left hand fast.

(8) The command for the *thrust* quickly follows the *parry*.

(9) In the same manner a *thrust* may be executed directly from the position of *guard*, in the direction of any *parry*, by one command: 1. *High*, 2. **THRUST**, 3. **GUARD**; or, 1. *Right low*, 2. **THRUST**, 3. **GUARD**, etc. (pl. 20).

(10) 1. *Low right*, 2. **SHORT**: Throw the body backward, straighten the left leg and bend the right knee; at the same time draw the piece back quickly to the full length of the right arm, lowering the

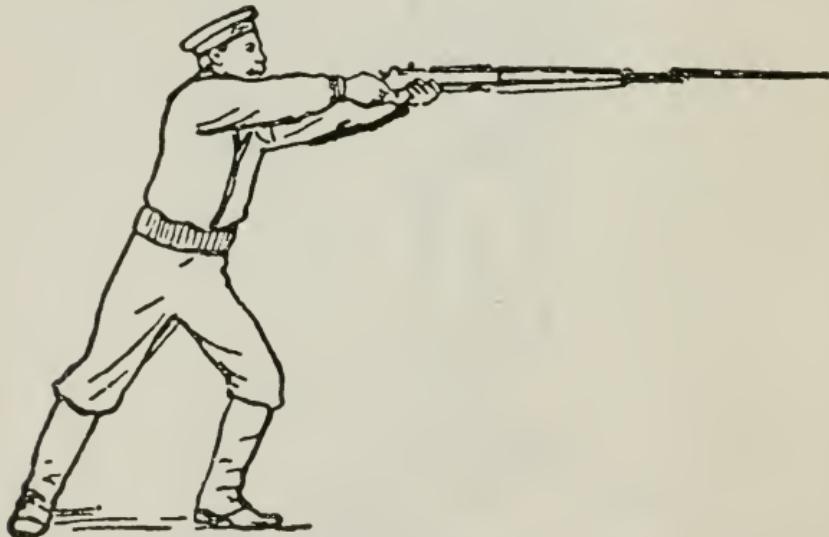


Plate 18. *Straight thrust.*

butt about 6 inches below the right hip, slipping the left hand up to the upper band, barrel up, left hand at the height of the hip, right hand at small of the stock (pl. 21).

(11) 1. *Low right*, 2. **SHORT**, 3. **THRUST** (or **STRAIGHT THRUST**): Throw the body forward on the hips, straighten the right leg, and bend the left knee; at the same time thrust the piece forward quickly to the full length of the left arm without moving the hands, barrel up, both hands at the height of the waist (pl. 22).

(12) Should the adversary retreat, the *straight thrust* must be used.

(13) Being at low right short: To *parry*, move the point of the bayonet as in *right* or *left parry* without moving the hands.

610. To use the butt.—(1) **BUZZ TO FRONT**: Raise the piece nearly vertical and bring it back, barrel in the hollow of right

shoulder, strike quickly the butt to the front, straighten the right leg, barrel resting on the shoulder (pl. 23).

(2) **BUTT TO RIGHT (or LEFT):** Face right (or left) and proceed as in *butt to front*. In resuming the *guard*, face left (or right).

(3) **BUTT TO REAR:** Turn to the right on both heels, keeping the feet nearly at a right angle, right toe to the rear, at the same time raise the piece over the left shoulder, barrel down and horizontal, back of right hand against left side of neck, left hand near lower hand, left leg straight; strike quickly the butt to the rear (pl. 24).



Plate 19. Right low thrust.

(4) In resuming the *guard*, turn to the left on both heels, and bring the left toe to the front.

611. To change guard.—(1). 1. *Change guard*, 2. **REAR:** Turn to the right on both heels, raising the toes, and face quickly to the rear; at the same time raise the point of the bayonet in a semicircle, and throw the piece to the rear, releasing it for an instant with both hands and then grasp it again with the hands interchanged, the right hand below the sight and the left at the small of the stock, the barrel to the right in the position of *guard* (pl. 25).

(2) The *parries* and *thrusts*, *facings*, *steps*, and other movements may then be executed according to the foregoing principles.

(3) To resume the original front, the commands are the same, and the movement is executed in a similar manner.

612. Combinations.—(1) When the recruits are thoroughly familiar with the different *steps*, *parries*, and *thrusts*, the instructor

combines several of them by giving the commands in quick succession, increasing the rapidity and number of movements in combination as the men acquire skill: ADVANCE, HIGH PARRY, THRUST; or FRONT DOUBLE, RIGHT PARRY, THRUST; FACE LEFT, HIGH PARRY THRUST, etc.

- (2) The *guard* is resumed without command.
- (3) Every movement to the front should be followed by a *thrust*; every movement to the rear by a *parry*.
- (4) The cautionary command, *attack*, may be used preceding a combination of movements.



Plate 20. High thrust.

(5) To repeat a combination, the numerals *one*, *two*, *three*, etc., may be used instead of repeating the commands.

(6) It is intended merely to prescribe the manner of executing the movements laid down, but not to restrict the number of movements, leaving to the discretion of c. cs. and the ingenuity of instructors the selection of such other exercises as accord with the object of the drill.

(7) As soon as the movements are executed accurately, the commands are given rapidly, expertness in the bayonet exercise depending mostly on quickness of motion.

613. Bayonet fighting.—(1) The man-o'-warsman should understand the *application* of the foregoing in attack and defense. To that end men must engage in the *assault*. This requires masks, padded clothing, padded gloves, dummy rifles, and spring dummy

bayonets. As a preliminary men should practice the thrusts at a wall pad or suspended dummy; first from a stand, second approaching at a walk, and third approaching at the "double." Practice in the use of the butt in attack at close quarters should also be had against the dummy.

(2) A half-hearted bayonet attack is dangerous only to the attacker. The attack must be resolute, rapid, and pushed well home. Even if an attack which has been delivered with determination and energy is parried, the very resolution with which it was delivered tends to so upset the adversary that he is unable to return. There



Plate 21. Low right short.

should be a quick recovery after an attack, and a quick return when attacked.

614. Assault exercise I.—Two men face each other at about 10 yards, equipped for the assault. On the word "charge" from the instructor, both advance at the walk, pieces at the trail. A, when within reach, attacks, doing his best to hit his opponent. B endeavors to parry and return. This should be practiced in each line of attack, given out in advance by the instructor, B taking care, at the start, to show sufficient opening to the attack. Each man knows exactly what his opponent is going to do, and there must be no attempt to deceive the other. The attack must be made only in the line indicated, with speed and determination, and both men must do their best to hit. The man who makes an unsuccessful attack should endeavor to close in on his opponent, to get inside his opponent's bayonet, with a view to tripping and using his butt. The

man who makes a successful parry should at once return and try to hit his opponent by any means he has been taught.



Plate 22. The low right short thrust.

615. **Assault exercise II.**—Two men equipped for the assault are placed facing each other at about 30 paces. A is directed to



Plate 23. Butt to front.

attack, B to defend. On the word "charge" both move forward on a steady double, pieces at the trail. A delivers a determined

attack on B. B must parry and *immediately* return. A must understand that this attack must be delivered without hesitation, for it will be impossible to stop and "fence" for an opening. The above is then reversed, B attacks, A defends. This exercise should continue, the instructor giving each man the same opportunity to attack and parry in a given line. In the assault exercises, when a man is hit, he should sing out "hit."



Plate 24.
Butt to rear.



Plate 25.
Change guard rear.

PHYSICAL DRILL WITH ARMS.

616. General rules.—(1) All movements in this section are 4-counts, and, except "Coming to ready," are performed two (or four) times.

(2) The exercises may be executed by command, or to music, or silently following the motions of a leader, and may be discontinued by the command HALT, when the *Order* will be resumed.

(3) Take intervals or distance as prescribed in the drill regulations.

617. Coming to ready.—Commands: *Come to ready*—1, 2, 3. (Pl. 26.)

1. Raise the piece with the right hand, grasp it with the left at the height of the right shoulder, knuckles toward the body. The right hand will grasp the small of the stock, forefinger under the guard.

2. Let the piece drop in front of the body to a horizontal, slings down, keeping the body erect.

3. Raise the piece horizontally to the height of the shoulders, slings up, at the same time moving the left foot to the left about 12 inches. Keep the chest out, and the shoulders well back. This position is *Ready*, and is the starting point of all the movements under the arms.

618. First exercise—Down and forward.—SPECIAL ACTION.—
The muscles of the hips, back, and arms. Commands: *Down and Forward*—1, 2, 3, 4; 1, 2, 3, 4, etc. (Pl. 27.)



Plate 26.

Fig. 1.
"Coming to Ready,"
First Position.

Fig. 2.
"Coming to Ready,"
Second Position.

Fig. 3.
"Ready."

1. From *Ready*, lower the piece horizontally to the insteps, keeping arms and knees (if possible) straight.

2. Back to *Ready*, chest out, elbows back.

3. Push piece horizontally forward.

4. Back to *Ready*.

619. Second exercise—Forward and Up.—SPECIAL ACTION.—
The muscles of the arms, and of side walls of the chest.

Commands: *Forward and Up*.—1, 2, 3, 4; 1, 2, 3, 4. (Pl. 28.)

1. From *Ready*, push out horizontally forward, as in the last exercise.

2. Back to *Ready*, chest out, elbows back.



Fig. 1.

"Down and Forward," End of
First Count.



Plate 27.

Fig. 2.
"Down and Forward," End of
Third Count.



Plate 28.

"Forward and Up," Third Count.



Plate 29.

"Up and Shoulders," Second
Count.

3. Push the piece to high vertical, keeping it horizontal, and expanding chest.

4. Back to *Ready*.

620. Third exercise—Up and shoulders.—**SPECIAL ACTION.**—The muscles of the arms, and of the side and front walls of the chest.

Commands: *Up and Shoulders*—1, 2, 3, 4; 1, 2, 3, 4. (Pl. 29.)

1. From *Ready*, push the piece to vertical, as in last exercise.

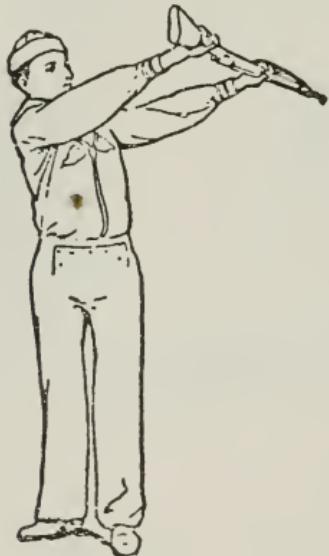


Plate 30.

"Side Pushes," Third Count.



Plate 31.

"Diagonal Lunges," First Count.

2. Lower piece to back of shoulders, head up, elbows well back.

3. Up again to vertical.

4. Down to *Ready*.

621. Fourth exercise—Side pushes.—**SPECIAL ACTION.**—The rotary muscles of the body and thighs; the loin muscles.

Commands: *Side Pushes*—1, 2, 3, 4; 1, 2, 3, 4. (Pl. 30.)

1. From *Ready*, push the piece horizontally to right side, twisting the body, keeping the eyes on the piece, but keeping the heels firmly on deck.

2. Back to *Ready*, chest out, elbows back.

3. Push the piece to the left side.

4. Back to *Ready*.

622. Fifth exercise—Diagonal lunges.—**SPECIAL ACTION.**—The muscles of the arms, back, and legs.

Commands: *Diagonal Lunges*—1, 2, 3, 4; 1, 2, 3, 4. (Pl. 31.)

1. From *Ready*, lunge diagonally to the right, about 36 inches, with the right leg, at the same time bringing the piece up horizontally to 45° . The left foot should be flat, and the eyes directed to the piece.

2. Back to *Ready*, chest out, elbows back.

3. Lunge to the left with left leg, as above.

4. Back to *Ready*.

623. Sixth exercise—Forward lunges.—SPECIAL ACTION.—
The muscles of the arms and legs and the side walls of the chest.



Plate 32.
"Forward Lunges," Third Count.



Plate 33.
"Front Sweeps."

Commands: *Forward Lunges*—1, 2, 3, 4; 1, 2, 3, 4. (Pl. 32.)

1. From *Ready*, lunge directly to the front, about 36 inches, with right leg, at the same time raising piece horizontally to vertical, and directing the eyes to the piece. Keep left foot flat.

2. Back to *Ready*.

3. Lunge to the front with left leg, as above.

4. Back to *Ready*.

624. Seventh Exercise—Front sweeps.—SPECIAL ACTION.—
All the principal posterior muscles of the body.

Commands: *Front Sweeps, Slow*—1, 2, 3, 4; 1, 2, 3, 4. (Pl. 33.)

1. From *Ready*, raise the piece horizontally to high vertical, keeping the chest well out, and emphasizing the upstretch.

2. Lower the piece slowly in front semicircle to insteps, keeping the arms straight and emphasizing the outreach.

3. Raise the piece slowly in front semicircle to vertical.

4. Down to *Ready*.



Fig. 1.
"Overhead Twists,"
Butt Forward.



Plate 34.

Fig. 2.
"Overhead Twists," Muzzle Forward.
(Side view.)

625. Eighth exercise—Overhead twists.—SPECIAL ACTION.— The rotary muscles of the upper part of the body; also stimulates the venous circulation.

Commands: *Overhead Twists, Butt Forward*—1, 2, 3, 4; *Muzzle Forward*—1, 2, 3, 4. (Pl. 34.)

1. From *Ready*, raise the piece overhead, at the same time twisting it till the butt points directly forward. Keep the piece horizontal.

2. Twist the piece to the right until the muzzle points directly forward. Hold the hips firmly forward, confining the movement to the upper part of the body.

3. Twist back till the butt points directly forward.
4. Lower the piece to *Ready*.
1. From *Ready*, raise the piece overhead, at the same time twisting it till the muzzle points directly forward.
2. Twist the piece to the left until the butt points directly forward.
3. Twist back until the muzzle points forward.
4. Lower the piece to *Ready*.

626. Ninth exercise—Side twists.—**SPECIAL ACTION.**—The muscles of the sides, loins, and small of the back.



Plate 35.

Fig. 1.
"Side Twists," Second Count.Fig. 2.
"Side Twists," Fourth Count.

(1) Commands: *Side Twists*—1, 2, 3, 4; 1, 2, 3, 4. (Pl. 35.)

1. From *Ready*, drop the piece horizontally in front to position No. 2 in *Coming to Ready*.
2. Lifting the butt up, carry the piece strongly to the left side and out, muzzle pointing directly down. Keep the hips firm.
3. Return the piece to position No. 2 in *Coming to Ready*.
4. Lifting the muzzle, carry the piece strongly to the right side and out, muzzle pointing directly up.
- (2) Repeat the exercise.
- (3) At the end of the ninth exercise, come to *Order Arms*.

PHYSICAL DRILL WITHOUT ARMS.

(Setting-up exercises; Swedish system.)

NOTE.—Extracted from Manual of Athletic Requirements, U. S. Naval Academy, by Lieut. Commander W. A. Richardson, U. S. Navy. Standard exercises as given throughout the United States naval service, and as adopted by many European services.

SETTING-UP EXERCISES.

627. The standing position is taken on the command: *Attention!*

Heels on the same line and as near each other as the conformation of the man permits.

Feet turned out equally and forming an angle of about 45°.

Knees straight without stiffness.

Hips level and drawn back slightly; body erect and resting equally on hips; chest lifted and arched; shoulders square and falling equally.

Arms and hands hanging naturally; thumb along the seam of the trousers.

Head erect and squarely to the front, chin drawn in so that the axis of the head and neck is vertical; eyes straight to the front.

Weight of the body resting equally upon the heels and balls of the feet.

NOTE.—The position of *Attention* is a very important one, as all exercises start from this position. Instructors should criticize the position of *Attention* with such remarks as, heads up, chin in, chest high, knees straight.

SIMPLE STARTING POSITIONS OF THE ARMS.

628. Wing standing position is taken on the command: *Hips—FIRM!*

The arms are bent upward and placed on the hips; fingers to the front, thumbs to the rear; palms of hands turned inward and pressing against the ridge of the hip bone; elbows pointing out to the side and slightly drawn back.

Standing position is returned to on the command: *Arms Downward—STRETCH!*

The arms are stretched downward with force the shortest way.

Common faults:

Elbows not pointed to the side and drawn back too much.

Hands not firm on the hips.

629. Yard standing position is taken on the command: *Arms Sideways—RAISE!*

The arms, fully stretched, are slowly raised sideways to the horizontal; fingers closed and the palms of hands turned downward.

Standing position is returned to on the command: *Arms Downward—SINK!*

The arms are slowly lowered to the sides.

Common faults:

Arms not held in the horizontal position.

Chest relaxed during the movement and not held high.

NOTE.—If standing position is to be returned to quickly, command: *Attention!*

The arms are then lowered to the sides with a swing without slapping the sides.

630. Reach standing position is taken on command: *Arms Forward—RAISE!*

The arms fully stretched are slowly raised forward to the horizontal; fingers closed and palms of hands turned inward toward each other.

Standing position is returned to on the command: *Arms Downward—SINK!*

The arms are slowly lowered forward to the sides.

If the command *Attention* is given the arms are swung down quickly as in preceding paragraph.

Common faults: As in preceding paragraphs and palms not turned inward.

631. Bend standing position is taken on the command: *Arms—BEND!*

The arms at the elbows are quickly bent upward to the shoulders; fingers touching the point of the shoulders; elbows drawn back and down to the sides.

Standing position is returned to on the command: *Arms Downward—STRETCH!*

The arms are stretched down to the sides with force the shortest way.

Common faults:

Shoulders not held firm. Elbows not drawn in to the sides.

Fingers not resting on the shoulders.

NOTE.—The object of the bend standing position is to raise the chest; the drawing of the arms to the sides has a tendency to do this and the result is a good brace.

632. Forward bend standing position is taken on the command: *Arms Forward—BEND!*

The arms are bent quickly upward in front of the chest; elbows at the height of shoulders and drawn well back; fingers closed; wrist and forearm in a straight line.

Standing position is returned to on the command: *Arms Downward—STRETCH!*

The arms are quickly stretched downward with force to the sides.

Common faults:

Elbows not at the height of shoulders and drawn back enough.
Wrist and forearm not in straight line. Shoulders carried forward.

633. Stretch standing position is taken on the command:
Arms Forward and Upward—RAISE!

The arms fully stretched are raised forward and upward in front of the body to the vertical position above the head, and are carried well back so they are in a straight line with the curve of the spine; palms of hands turned inward toward each other and arms shoulder width apart.

Standing position is returned to on the command: *Arms Forward and Downward—SINK!*

The arms are slowly lowered in the reverse manner to the sides.

Stretch standing position can also be taken by raising the arms sideways and upward on the command:

Arms Sideways and Upward—RAISE!

The arms are raised sideways to the yard position, the hands are quickly turned upward and the movement continued upward.

Arms Sideways and Downward—SINK!

The arms are lowered in the reverse manner to the sides.

Common faults:

Arms not held straight and in line with the trunk.

Arms not held shoulder width apart.

634. Rest standing position is taken on the command:
Neck—REST!

The arms are bent quickly at the elbows, carried upward the shortest way and placed on the back of head with the finger tips touching each other; elbows well back, chest high and head erect.

Standing position is returned to on the command: *Arms Downward—STRETCH!*

The arms are stretched downward to the sides with force the shortest way.

Common faults:

The head carried forward during the arm movement.

The elbows not carried back enough.

Fingers interlocked.

635. Palm standing position is taken on the command:
Hands Outward—TURN!

With the arms fully stretched and held close to the body, the hands are turned outward away from the body as far as possible.

Standing position is returned to on the command: *Hands Inward—TURN!*

The hands are turned inward toward the body.

Common faults: Arms not held close to the body. Shoulders carried forward.

SIMPLE STARTING POSITIONS OF THE LEGS.

636. Close standing position is taken on the command: *Feet—CLOSE!*

By slightly raising the toes from the deck and pivoting on the heels the feet are carried inward so the inner side of the feet touch.

Standing position is returned to on the command: *Feet—OPEN!*

By pivoting on the heels the feet are turned out to the standing position.

Common faults:

Bending the body forward at the waist line.

Dragging the feet on the deck during the closing and opening.

637. Outward walk standing position is taken on the command: *Left (Right) Foot Outward—PLACE!*

The named foot is placed 2 foot lengths outward in the direction that the foot is pointed, 45° angle to the front; weight of the body equally distributed on both feet and shoulders square to the front.

Standing position is returned to on the command: *Feet Together—PLACE!*

By pushing from the deck with the forward foot it is carried back to the standing position.

Common faults:

Not keeping the shoulders square to the front.

Sliding the feet along the deck.

Not preserving the angle of the feet. Weight not equally distributed.

638. Forward walk standing position is taken on the command: *Left (Right) Foot Forward—PLACE!*

The named foot is placed 2-foot lengths directly forward so that the heels are in a straight line; weight of the body equally distributed and preserving the angle of the feet.

Standing position is returned to on the command: *Feet Together—PLACE!*

The feet are placed together as in preceding paragraph.

Common faults: Besides those in preceding paragraph, the foot not placed directly forward.

639. Outward lunge standing position is taken on the command: *Left (Right) Foot Outward—LUNGE!*

The named foot is carried outward 3 foot lengths in the same direction, the forward knee is bent to a right angle and directly over the foot, both feet flat on the deck; rear leg, trunk, and head in a straight line, with the upper body inclined forward and shoulders square to the front as in the standing position.

Standing position is returned to on the command: *Feet Together—PLACE!*

By pushing off with the forward foot it is carried back to the standing position.

Common faults:

Not stepping out 3 foot lengths and feet not flat on the deck.
Rear leg and body not in a straight line.

640. Forward lunge standing position is taken on the command: *Left (Right) Foot Forward—LUNGE!*

The named foot is carried 3-foot lengths forward, the knee bent to a right angle as in preceding paragraph, shoulders square to the front; rear leg and trunk in a straight line; feet flat on the deck.

Standing position is returned to on the command: *Feet Together—PLACE!*

The foot is carried back to the standing position as in preceding paragraph.

Common faults: Besides those in preceding paragraph, the foot not carried straight forward and the rear heel raised from the deck.

641. Stride standing position is taken on the commands (three methods):

(a) *Left (Right) Foot Sideways—PLACE!*

(b) *Feet Sideways—PLACE!*

(c) *Feet Sideways with a Jump—PLACE!*

(a) The named foot is carried directly sideways 2 foot lengths and placed on the deck; equal weight on both feet.

(b) The left foot is carried 1 foot length to the left, and the right 1 foot length to the right; the distance between the heels should be at least 2 foot lengths.

(c) By pushing off from the deck and springing upward the legs are parted sideways and the feet placed on the deck; the distance between the heel should be at least 2 foot lengths.

Standing position is returned to on the commands:

(a-b) *Feet Together—PLACE!*

(c) *Feet Together with a Jump—PLACE!*

(a) The foot which was placed sideways is carried back to the standing position.

(b) Two motions.

The left foot is carried in 1 foot length and the right foot is carried in likewise to the standing position.

(c) By pushing off from the deck both feet are carried inward to the standing position.

Common faults:

Not making the stride long enough.

Body swaying and sliding feet on deck.

642. Toe standing position is taken on the command: *Heels—RAISE!*

With the heels together and the arms held to the sides, the body is raised as high as possible on the toes, maintaining the balance; ankle joints stretched; chest held high and head erect.

Standing position is returned to on the command: *Heels—SINK!*
The heels are lowered to the deck.

Common faults: Body swaying and heels not held together.

643. Spring standing position is taken on the commands: *Heels—RAISE!* (see preceding paragraph). *Knees—BEND!*

Maintaining the balance the knees are bent downward until the upper leg and lower leg are at right angles to each other; the position of the rest of the body unaltered.

Standing position is returned to on the commands: *Knees—STRETCH!*

Keeping the heels clear of the deck the knees are stretched upward. *Heel—SINK!*

The heels are lowered to the deck.

Common faults:

Heels lowered during the knee bending and stretching.

Body swaying forward or backward and not maintaining the balance.

644. Spring sitting position is taken on the commands: *Heels—RAISE!* *Knees to Sitting—BEND!*

The knees are bent as in the preceding paragraph, but with the difference that the knees are bent still further downward until the thighs touch the heels.

Standing position is returned to as in preceding paragraph on the commands: *Knees—STRETCH!* *Heels—SINK!*

Common faults: Besides those in preceding paragraph, knees not bent enough.

STARTING POSITIONS OF THE TRUNK.

645. Stoop standing position is taken on the command: *Trunk Forward—BEND!*

With the knees straight and the arms held to the sides, the trunk is slowly lowered forward to the horizontal so that the trunk and legs are at right angles to each other.

Standing position is returned to on the command: *Trunk Upward—STRETCH!*

The trunk is raised slowly upward to the standing position.

Common faults:

The back rounded and head allowed to fall forward.

The knees not held straight and chin not drawn in.

646. Arch standing position is taken on the command: *Trunk Backward—BEND!*

With the knees straight and the arms held at the sides, the trunk is bent slowly backward; the bending takes place in the upper spine; the chest should be held high and the chin drawn in.

Standing position is returned to on the command: *Trunk Upward—STRETCH!*

The trunk is raised slowly upward to the standing position.

Common faults:

The bending taking place in the lower spine instead of the upper spine.

The chin not drawn in and the head allowed to fall backward.

647. Twist standing position is taken on the command: *Trunk to the Left (Right)—TWIST!*

With the arms held to the sides, the trunk is slowly twisted to the named side as far as possible, keeping the hips square to the front. The twisting takes place above the hips and not in the thighs.

Standing position is returned to on the command: *Trunk Forward—TWIST!*

The trunk is slowly twisted forward to the standing position.

Common faults:

The twisting taking place in the thighs instead of the trunk.

The hips not held square to the front.

648. Sidebend standing position is taken on the command: *Trunk to the Left (Right)—BEND!*

With the arms held to the sides, chin drawn in, and the feet firm on the deck, the trunk is slowly bent to the named side as far as possible. The position of the head is unaltered to the trunk.

Standing position is returned to on the command: *Trunk Upward—STRETCH!*

The trunk is slowly raised upward to the standing position.

Common faults:

Raising the opposite foot to the side of the bending off the deck.

Not keeping the head in line with the curve of the spine.

Twisting the trunk during the side bending.

MISCELLANEOUS STARTING POSITIONS.

649. Stoop falling position is taken on the command: *Stoop Falling—PLACE!*

(Two motions:)

1. The knees are bent to sitting, as in paragraph —, and the hands are placed on the deck between the knees, keeping them shoulder width apart; the head is held high, and the back straight. The name of this position is called crouch sitting position.

2. The weight is taken on the arms and the legs are stretched backward with force, the feet placed on the deck so that the body is in an inclined position, the arms are held straight, the legs, trunk, and head in a straight line.

Standing position is returned to on the command: *ATTENTION!*

(Two motions:)

1. By pushing off with the feet the legs are brought forward to crouch sitting position.

2. By pushing off with the hands and stretching the knees, the body is straightened up to the standing position.

Common faults:

In crouch sitting: The back rounded and the head carried forward.

In stoop falling: Legs and trunk not in a straight line, allowing back to sway or raising hips.

Sliding feet along the deck.

650. Crouch sitting position is taken on the command: *Crouch Sitting—PLACE!*

The knees are bent and the hands placed on the deck as in preceding paragraphs.

Standing position is returned to on the command: **ATTENTION!**

Common faults: (See preceding paragraph.)

651. Back stoop falling position is taken on the commands: (Two motions:)

1. *Stoop Falling—PLACE!* (See preceding paragraph.)

2. *Change to Back Stoop Falling on Left (Right) Arm—TURN!*

By keeping the arms straight, the body is turned on the named arm and the free hand placed on the deck about 18 inches from the other hand. The body is now in an inclined position, with the trunk, legs, and head in a straight line, as in the standing position. The back of the body is toward the deck.

Standing position is returned to in two motions on the commands:

1. *Change to Stoop Falling on Left (Right) Arm—TURN!*

The body is turned on the named arm back to the stoop falling position.

2. **ATTENTION!** (See preceding paragraph.)

Common faults:

Besides those in paragraphs 645, 650, the arms not held straight and the body allowed to hinge at the waistline.

The head carried forward and not in line with the trunk.

652. Side falling position is taken on the commands: (Two motions:)

1. *Stoop Falling—PLACE!*

2. *Change to Side Falling on Left (Right) Arm—TURN!*

The body is turned on the named arm until the side of the body is turned toward the deck, the free arm is held to the side and the supporting arm is held straight. The body should now be in an inclined position, with the head, trunk, and legs in a straight line as in the standing position.

Standing position is returned to in the reversed manner in two motions, on the commands:

1. *Change to Stoop Falling on Left (Right) Arm—TURN!*

2. **ATTENTION!**

Common faults:

The body and arm not held straight.

Chin not drawn in and head carried to the side.

Legs not held together as in standing position.

653. Lying position is taken on the commands: (Two motions:)

1. *Stoop Falling—PLACE!* (See par. 649).

2. *Change to Lying on Left (Right) Arm—TURN!*

The body is turned on the named arm to the back stoop falling position, as in paragraph 651, then immediately lowered to the deck so that the back of the body is flat on the deck with the arms to the sides and the legs together.

Standing position is returned to in the reversed manner, in two motions, on the commands:

1. *Change to Stoop Falling on Left (Right) Arm—TURN!*

2. *ATTENTION.*

Common faults: Besides those in paragraphs 649, 650, the legs apart and arms not at the sides.

654. Forward lying position is taken on the commands: (Two motions:)

1. *Stoop Falling—PLACE!* (See par. 649.)

2. *Change to Forward Lying—PLACE!*

The body is quickly lowered to the deck and the arms lowered to the sides. The body should now be in a horizontal position on the deck with the chin drawn in and the legs together.

Standing position is returned to in the reversed manner in two motions on the commands: *Change to Stoop Falling—PLACE!*

Attention!

NOTE.—The above position can also be taken on the command:

Forward Lying—PLACE!

Common faults:

The front of the body not flat on the deck and arms not held to sides.

Legs apart and chin not drawn in.

655. Stride kneeling position is taken on the commands: *Stride Kneeling—PLACE!*

(Two motions:)

1. The right knee is bent and the left knee placed on the deck about 6 inches to the left of the right foot, half kneeling.

2. The right knee is placed on the deck about 6 inches to the right, so that the distance between the knees is about 12 inches. The body from the knees up should be held straight and heels together.

Standing position is returned to on the command: *ATTENTION!*

(Two motions:)

1. The left knee is raised and the foot placed on the deck opposite the right knee, both hands are placed on the left knee.

2. By stretching the knees the body is raised to the standing position and the arms lowered to the sides.

Common faults:

Hinging of the body at the waistline.

Touching the deck with the hands in taking the position.

Heels not together when in the kneeling position.

COMBINED STARTING POSITIONS OF THE ARMS AND LEGS.

656. Wing stride standing position is taken on the commands: *Left (Right) Foot Sideways and Hips—FIRM!*

The named foot is placed sideways, as in paragraph 641 (a), and at the same time the hands are placed on the hips, as in paragraph 628.

Standing position is returned to on the commands: *Feet Together and Arms Downward—STRETCH!*

The foot is carried in to the other foot and at the same time the arms are stretched down to the sides.

Common faults: (See pars. 628 and 641.)

657. Bend toe standing position is taken on the commands: *Heel Raising and Arms—BEND!*

The heels are raised, as in paragraph 642, and at the same time the arms are bent upward to the bend position, as in paragraph 631.

Standing position is returned to on the command: *Heel Sinking and Arms Downward—STRETCH!*

The heels are lowered to the deck and at the same time the arms are stretched down to the sides.

Common faults: (See pars. 631 and 642.)

658. Rest Outward walk standing position is taken on the command: *Left (Right) Foot Outward and Neck—REST!*

The named foot is placed outward, as in paragraph 637, and at the same time the arms are bent upward to the rest position, as in paragraph 634.

Standing position is returned to on the command: *Feet Together and Arms Downward—STRETCH!*

The foot is carried back to the other foot and at the same time the arms are stretched down to the sides.

Common faults: (See pars. 634 and 637.)

659. Stretch outward lunge standing position is taken on the command: *Left (Right) Foot Outward Lunging and Arms Forward and Upward—RAISE!*

The named foot is shifted outward, as in paragraph 639, at the same time the arms are raised forward and upward in front of the body to the vertical position above the head, as in paragraph 633.

Standing position is returned to on the command: *Feet Together and Arms Forward and Downward—SINK!*

The advanced foot is carried back to the other foot and at the same time the arms are lowered forward and downward to the sides.

Common faults: (See pars. 633 and 639.)

NOTE.—The stretch position can also be taken by raising the arms sidewise and upward. (See par. 633.)

EXERCISES OF THE LEGS CARRIED OUT IN THE SIMPLE STARTING POSITIONS.

The starting position.

The exercise.

660. Wing standing.....Heel raising.The starting position is taken, as in paragraph 628, on the command: *Hips—FIRM!*The exercise is carried out, as in paragraph 642, on the commands: *Heels—RAISE!* *Heels—SINK!*

Then the heel raising is carried out by numbers: at count “One” the heels are raised, at count “Two” they are lowered, and so on.

Common faults: (See pars. 628 and 642.)

661. Yard stride standing.....Heel raising.The starting position is taken on the command: *Left (Right) Foot Sideways and Arms Sideways—RAISE!*

The named foot is shifted sideways, as in paragraph 641 (a), at the same time the arms are raised sideways, as in paragraph 629.

The exercise is carried out as in paragraph 642.

Standing position is returned to in the reversed manner on the command: *Feet Together and Arms Downward—SINK!*

Common faults: (See pars. 629 and 641.)

662. Wing, outward walk standing.....Heel raising.The starting position is taken on the command: *Left (Right) Foot Outward and Hips—FIRM!*

The named foot is placed outward, as in paragraph 637, and at the same time the hands are placed on the hips.

Standing position is returned to on the command: *Feet Together and Arms Downward—STRETCH!*

The named foot is shifted back to the other foot and at the same time the arms are stretched down to the sides.

Common faults: (See par. 642.)

663. Yard, forward walk standing.....Heel raising.The starting position is taken on the command: *Left (Right) Foot Forward and Arms Sideways—RAISE!*

The named foot is placed forward as in paragraph 638 and at the same time the arms are raised sideways as in paragraph 629.

The heel raising is carried out as in paragraph 642.

Standing position is returned to on the command: *Feet Together and Arms Downward—SINK!*

The named foot is shifted back and the arms lowered to the sides.

Common faults: (See pars. 638 and 642.)

664. Wing standing.....Heel raising and knee bending.Starting position is taken on the command: *Hips—FIRM!* (Par. 628.)

The exercise is carried out on the commands:

Heels—RAISE! (Par. 642.) *Knees—BEND!* (Par. 643.)*Knees—STRETCH!* *Heels—SINK!*

Then the exercise is carried out by numbers: at "One" the heels are raised, at "Two" the knees are bent, at "Three" the knees are stretched, at "Four" the heels are lowered, and so on.

Standing position is returned to on the command: *Arms Downward—STRETCH!*

Common faults: (See par. 643.)

665. Yard standing: Heel raising and knee bending to sitting.

Starting position is taken on the command: *Arms Sideways—RAISE!* (See par. 629.)

The exercise is carried out as in the preceding paragraph, but with the difference that the knees are bent to sitting, as in paragraph 644, on the commands:

Heels—RAISE!

Knees to Sitting—BEND!

Knees—STRETCH!

Heels—SINK!

Standing position is returned to on the command: *Arms Downward—SINK!* (See par. 629.)

Common faults: (See pars. 629 and 644.)

666. Wing standing.....Lunging outward.

Starting position is taken on the command: *Hips—FIRM!* (See par. 628.)

The exercise is carried out on the commands:

Left (Right) Foot Outward—LUNGE! (See par. 639.)

Feet Together—PLACE!

Then the exercise is carried out by numbers.

Standing position is returned to on the command: *Arms Downward—STRETCH!*

Common faults: (See pars. 628 and 639.)

667. Bend standing.....Lunging forward.

Starting position is taken on the command: *Arms—BEND!* (See par. 631.)

The exercise is carried out on the commands:

Left (Right) Foot Forward—LUNGE! (See par. 640.)

Feet Together—PLACE!

Standing position is returned to on the command: *Arms Downward—STRETCH!*

Common faults: (See pars. 631 and 640.)

668. Wing standing.....Advance by lunging forward.

Starting position is taken on the command: *Hips—FIRM!* (See par. 628.)

The exercise is carried out on the commands:

Advancing Forward by Numbers—ONE! Two! THREE! FOUR!

At count "One," the left foot is shifted forward, as in paragraph 640; at "Two," the right foot is shifted forward to the left foot; at "Three," the right foot is shifted forward; and at "Four," the left foot is carried forward to the right, and so on.

Then the class is faced about and the exercise repeated.

Standing position is returned to on the command: *Arms Downward—STRETCH!*

Common faults: The class not working in unison and not keeping the proper dress in ranks while advancing forward.

EXERCISES OF THE ARMS CARRIED OUT IN THE SIMPLE STARTING POSITIONS.

The starting position.

The exercise.

669. Standing.....Arm stretching sideways.

The exercise is carried out on the command: *Arms Sideways—STRETCH!*

(Two Motions:)

1. The arms are bent upward to the bend position as in paragraph 621.

2. The arms are stretched sideways to the horizontal position, with the palms of the hands turned downward.

Standing position is returned to on the command: *Arms Downward—STRETCH!*

(Two motions:)

1. The arms are carried in to the bend position with a snap.

2. The arms are stretched downward with force to the sides.

NOTE.—The movement of all arm stretchings is continuous, with very little pause at the bend position.

Common faults:

The arms not fully stretched and the palms not turned downward.

Not enough snap and effort in the bending movement.

670. Standing.....Arm stretching upward.

The exercise is carried out on the command: *Arms Upward—STRETCH!*

(Two motions:)

1. The arms are bent upward, as in preceding paragraph.

2. The arms are stretched upward to the vertical position above the head, with palms turned inward and arms shoulder width apart.

Standing position is returned to on the command: *Arms Downward—STRETCH!*

(Two motions:)

1. The arms are carried in to the bend position with a snap.

2. The arms are stretched downward with force to the sides.

NOTE.—After arm stretchings are carried out by command, they are executed by numbers, one count for each movement.

Common faults:

Arms not stretched upward with force and held shoulder width apart.

Palms of hands not turned inward.

671. Standing.....Arm stretching forward.

The exercise is carried out on the command: *Arms Forward—STRETCH!*

(Two motions:)

1. The arms are bent upward, as in paragraph 631.
2. The arms are stretched forward to the horizontal position, in front of the body; palms of hands turned inward and arms shoulder width apart.

Standing position is returned to on the command: *Arms Downward—STRETCH!*

The arms are stretched downward in two motions, as in preceding paragraph.

Common faults: (See preceding paragraph.)

672. Standing.....Arm stretching backward.

The exercise is carried out on the command: *Arms Backward—STRETCH!*

(Two motions:)

1. The arms are bent upward, as in paragraph 631.
2. The arms are stretched downward and backward with force; the hands are held shoulder width apart and the palms are turned inward.

The position arising from the arm stretching backward is called drag standing.

Standing position is returned to on the command: *Arms Downward—STRETCH!*

The arms are stretched downward in two motions, as in preceding paragraph.

Common faults:

The head carried forward as the arms are stretched backward.

The arms not carried back far enough.

673. Forward bend standing.....Arm striking sideways.

Starting position is taken on the command: *Arms Forward—BEND!* (See paragraph 632.)

The exercise is carried out on the commands: *Arms Sideways—STRIKE!*

The arms are stretched sideways to the yard position.

The upper arms are held in a firm position.

Arms Forward—BEND!

The arms are carried in to the first position.

Then the arm striking is carried out by numbers.

Standing position is returned to on the command: *Arms Downward—STRETCH!*

Common faults: The upper arms not held firm during the arm striking.

674. Bend standing: Arm stretching in various directions.

Starting position is taken on the command: *Arms—BEND!*

The exercise is carried out on the commands:

Arms Sideways—STRETCH! *Arms*—BEND! (See par. 669.)

Arms Upward—STRETCH! *Arms*—BEND! (See par. 670.)

Arms Forward—STRETCH! *Arms*—BEND! (See par. 671.)

Arms Backward—STRETCH! *Arms*—BEND! (See par. 672.)

Standing position is returned to on the command: *Arms Downward*—STRETCH!

Common faults: (See pars. 669, 670, 671, and 672.)

675. Reach standing: Arm swinging upward and forward.

Starting position is taken on the command: *Arms Forward*—RAISE!

The exercise is carried out on the commands: *Arms Upward*—SWING!

The arms are swung upward to the stretch position.

Arms Forward—SWING!

The arms are swung forward to the reach position.

Standing position is returned to on the command: *Arms Downward*—SINK!

NOTE.—All arm swingings are carried out by numbers after being executed by command.

676. Stretch standing: Arm swinging forward and upward.

Starting position is taken on the command: *Arms Forward and Upward*—RAISE! (See par. 633.)

The exercise is carried out on the commands: *Arms Forward*—SWING! *Arms Upward*—SWING!

As in the preceding paragraph, but with the difference that the arms are swung first to the reach and then to the stretch position.

Standing position is returned to on the command: *Arms Forward and Downward*—SINK!

677. Reach standing.....Arm swinging sideways.

Starting position is taken on the command: *Arms Forward*—RAISE!

The exercise is carried out on the commands: *Arms Sideways*—SWING!

The arms are swung sideways to the yard position, palms turned downward.

Arms Forward—SWING!

The arms are swung forward to the reach position, palms turned inward.

Standing position is returned to on the command: *Arms Downward*—SINK!

Common faults: The head carried forward during the arm swinging sideways.

678. Yard standing.....Arm swinging forward.

Starting position is taken on the command: *Arms Sideways*—RAISE!

The exercise is carried out on the commands: *Arms Forward—SWING! Arms Sideways—SWING!*

As in the preceding paragraph, but with the difference that the arms are first swung to the reach and then to the yard position.

Standing position is returned to on the command: *Arms Downward—SINK!*

Common faults: (See preceding paragraph.)

679. Standing.....Arm swinging forward and upward.

The exercise is carried out on the commands: *Arms Forward and Upward—SWING!*

The arms are swung forward and upward in front of the body to the stretch position.

Arms Forward and Downward—SWING!

The arms are swung forward and downward in the reversed manner to the standing position.

Common faults:

The arms not held straight and shoulder width apart.

The arms allowed to swing beyond the thighs in the downward swing.

680. Standing.....Arm swinging sideways and upward.

The exercise is carried out on the commands: *Arms Sideways and Upward—SWING! Arms Sideways and Downward—SWING!*

As in preceding paragraph, but with the difference that the arms are swung sideways and upward and then sideways and downward.

Common faults: Besides those in preceding paragraph, the arms allowed to slap the thighs in the downward swing.

681. Standing.....Arm circling with a swing.

The exercise is carried out on the commands: *Arms Forward and Upward—SWING! Arms Sideways and Downward—SWING!*

Common faults: (See par. 633.)

682. Half stretch standing.....Arm changing with a swing.

Starting position is taken on the command: *Left (Right) Arm Forward and Upward—RAISE!* (See par. 633.)

The exercise is carried out by numbers on the command: *Arm Changing with a Swing by Numbers—ONE! Two!*

At "One," the arm above the head is swung forward and downward and at the same time the other arm is swung forward and upward.

At "Two," the arms are changed in the reversed manner, and so on.

Standing position is returned to on the command: *Left (Right) Arm Forward and Downward—SINK!*

Common faults:

The arms not held straight during the swinging.

The head carried forward and the shoulders not held firm.

683. Stretch standing.....Arm parting.

The starting position is taken on the command: *Arms Forward and Upward—RAISE!* (Par. 633.)

The exercise is carried out on the command: *Arm Parting by Numbers—ONE!* The arms are quickly parted and lowered to the yard (A) position, with palms turned upward.

Two! They are quickly swung upward to the first position, and so on.

Standing position is returned to on the command: *Arms Forward and Downward—SINK!*

Common faults: The arms not held straight and the head carried forward.

684. Yard (A) standing.....Arm parting.

The starting position is taken on the commands: *Arms Sideways—RAISE!* (Par. 629.)

Hands Upward—TURN!

With the arms held straight the hands are quickly turned upward to the yard (A) position.

The arm parting is then carried out by numbers as in the preceding paragraph, but with the difference that the arms are raised upward and then sideways.

Standing position is returned to on the commands: *Hands Downward—TURN! Arms Downward—SINK!*

Common faults: (See preceding paragraph.)

EXERCISES OF THE NECK CARRIED OUT IN THE SIMPLE STARTING POSITIONS.

The starting position.

The exercise.

685. Wing standing. Head bending backward (forward).

Starting position is taken on the command: *Hips—FIRM!*

The exercise is carried out on the commands: *Head Backward (Forward)—BEND!*

The head is bent backward (forward) as far as possible; the chin is drawn in and the shoulders held firm.

Head Upward—STRETCH!

The head is raised upward to the standing position.

Standing position is returned to on the command: *Arms Downward—STRETCH!*

Common faults: Chin not drawn in and the shoulders not firm.

NOTE.—Head bending can also be carried out in the bend, yard or forward bend standing positions.

686. Wing standing.....Head bending sideways.

Starting position is taken on the command: *Hips—FIRM!*

The exercise is carried out on the commands: *Head to the Left (Right)—BEND!*

The head is slowly bent to the named side as far as possible, the shoulders are held firm and the chin is drawn in.

Head Upward—STRETCH!

The head is slowly raised to the starting position.

Standing position is returned to on the command: *Arms Downward—STRETCH.*

NOTE.—Head bending sideways can also be carried out in the bend, yard or forward bend standing positions.

687. Wing standing.....Head twisting.

Starting position is taken on the command: *Hips—FIRM!*

The exercise is carried out on the commands: *Head to the Left (Right)—TWIST!*

The head is twisted to the named side as far as possible, keeping the head erect and the chin drawn in.

Head Forward—TWIST!

The head is slowly twisted forward to the standing position.

Standing position is returned to on the command: *Arms Downward—STRETCH!*

NOTES.—Head twisting can also be carried out in the wing, bend, yard, and spring sitting positions. All head bendings and twistings should be carried out by numbers after being executed by command.

EXERCISES OF THE TRUNK IN THE SIMPLE STARTING POSITIONS.

The starting position.

The exercise.

688. Rest standing.....Trunk bending backward.

Starting position is taken on the command: *Neck—REST.*

The exercise is carried out on the commands: *Trunk Backward—BEND! Trunk Upward—STRETCH!* (See par. 646.)

Standing position is returned to on the command: *Arms Downward—STRETCH!*

NOTES.—Trunk bending backward should always be followed by trunk bending forward.

Trunk bending backward can also be carried out in the wing, bend, yard, or stretch standing positions.

689. Wing standing.....Trunk bending forward.

Starting position is taken on the command: *Hips—FIRM!*

The exercise is carried out on the commands: *Trunk forward—BEND! Trunk Upward—STRETCH!* (See par. 645.)

Standing position is returned to on command: *Arms Downward—STRETCH!*

Trunk bending forward can also be carried out in the bend, yard, stretch, or forward bend standing positions.

Common faults: (See par. 645.)

690. Yard standing.....Trunk bending sideways.

Starting position is taken on the command: *Arms Sideways—RAISE!* (Par. 629.)

The exercise is carried out on the commands: *Trunk to the Left (Right)—BEND!* (See par. 648.)

Trunk upward—STRETCH!

Standing position is returned to on the command: *Arms Downward—SINK!*

NOTE.—Trunk bending sideways can also be carried out in the wing, rest, bend, stretch, or forward bend standing positions.

Common faults: (See par. 648.)

691. Rest standing.....Trunk twisting.

Starting position is taken on the command: *Neck—REST!* (Par. 634.)

The exercise is carried out on the commands: *Trunk to the Left (Right)—TWIST!* (Par. 647.)

Trunk Forward—TWIST!

Standing position is returned to on the command: *Arms Downward—STRETCH!*

NOTE.—Trunk twisting can also be carried out in the bend, yard, wing, forward bend, or stretch standing positions.

Common faults: (See par. 647.)

816. Mass cheering and singing.—(a) On vessels of all types, the ship's organization and routine should provide for cheering and singing by the entire crew. This should be considered as much a necessity as certain forms of physical drill, athletics, moving pictures, or other duties on board ship. This form of ship's activity must be so directed that it becomes voluntary. Like many branches of athletics, success is not necessarily the result of a picked or specially excellent crew, but is the result of the type of officer or petty officer who leads. Each vessel should make mass singing and cheering one of the interesting and important branches of all crew's activities.

(b) The commanding officer should place an officer in charge of singing and cheering who has an exceptional personality, and who preferably has received some previous training in singing or cheer leading. This officer should have the entire crew to draw upon for assistance in forming the singing and cheering sections. Where possible, competitions between divisions should be developed.

PART VIII. BOATSWAIN'S CALLS.

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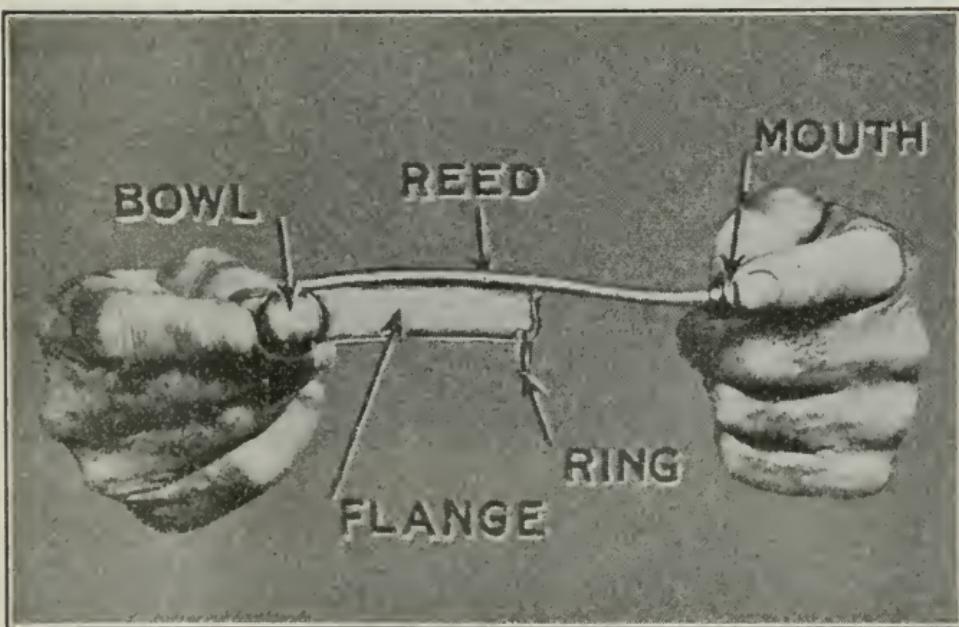


BOATSWAIN'S CALLS.

NOTE.—Originally prepared by Chief Boatswain Stephen McCarthy, United States Navy, and adapted from Naval Institute Proceedings, No. 147.

THE CALL.

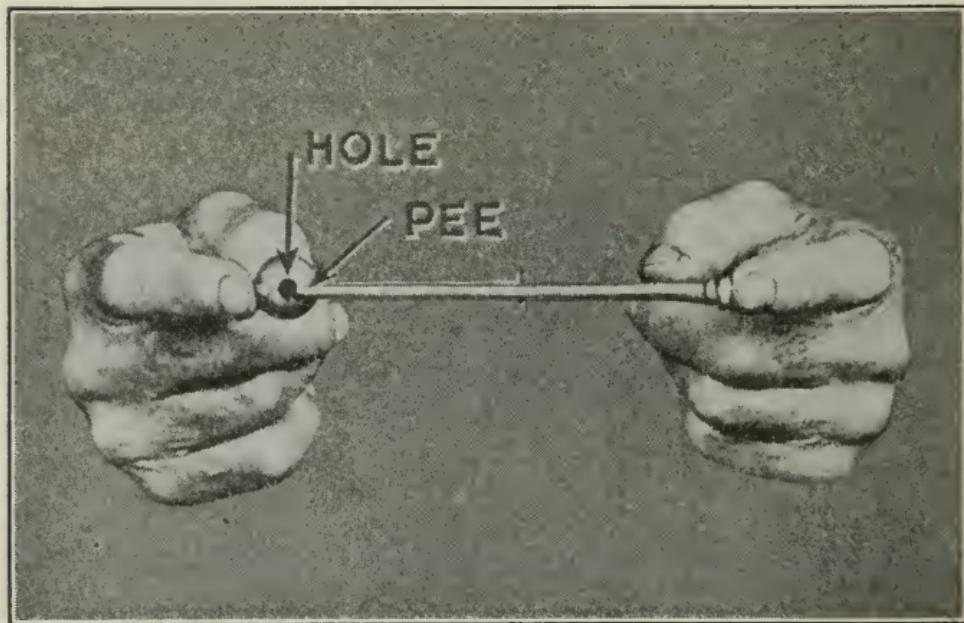
701. Description.—The instrument and its nomenclature are illustrated in Figures 1 and 2.



702. Tuning.—(1) Some calls issued are not shrill enough in sound, and each user of a call has his own method of tuning his call to that shrill note required in nearly all the pipes used.

(2) Most calls are too open at the pee and have to be flattened or soldered at the sides of the pee, so as to fill the space between it and the bowl.

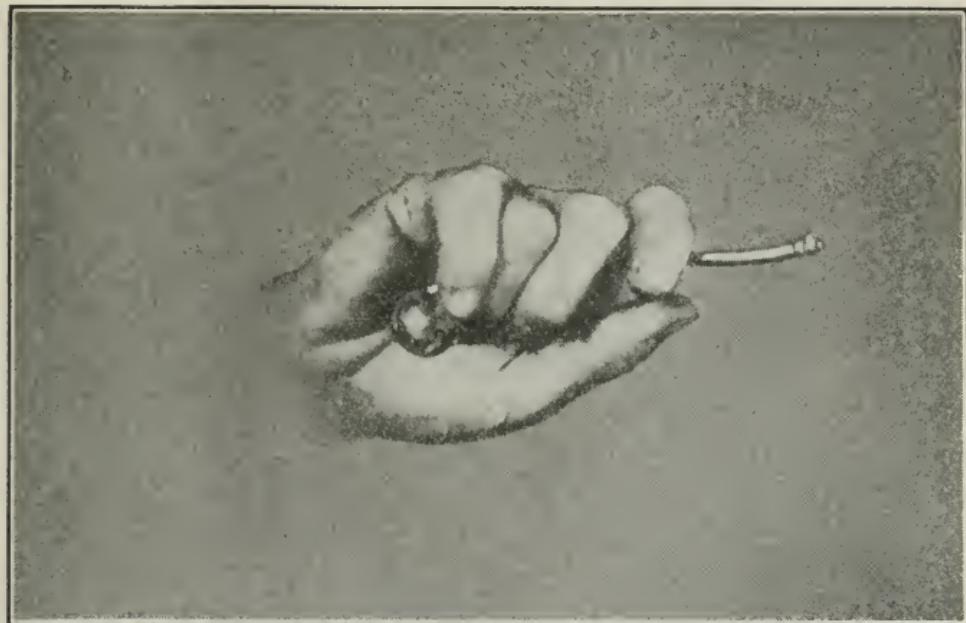
(3) Some calls are improved by scraping the wind edge or edge of the bowl farthest from the pee. It is sometimes necessary to enlarge this hole by scraping as well as by sharpening the edge until the reed strikes the hole fair. A test of this is often made by pushing the large end of a broom straw through the reed to find how the straw hits the wind edge of the hole. That edge of the hole should split the straw. The call once tuned should sound if held with its mouth to a gentle breeze; and, when blown with open hand, should sound from the most repressed pressure to the full strength of the lungs

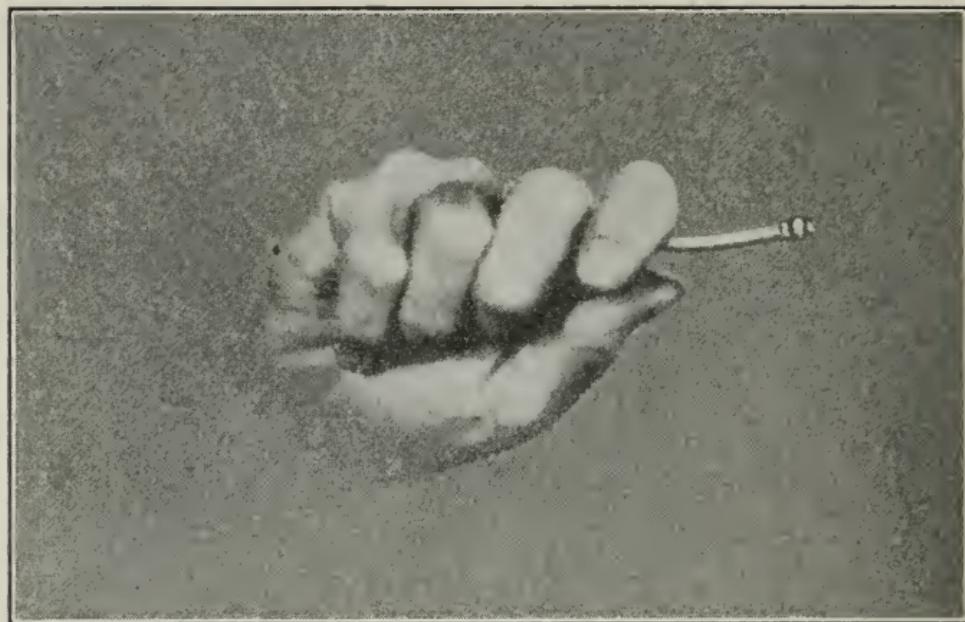


without any flaw in the sound known as wind leak or hoarseness; and the sound with closed hand should be as clear and shrill as it is possible to make it.

703. Positions of the hand.—(1) There are four positions of the hand—*open, curved, closed, and clinched*.

(2) These positions also indicate the lung force or pressure of blowing. As a rule the open hand calls for the least pressure required to make a soft, clear note, while the clinched calls for all the pressure that can be used in making the note shrill and clear.





PIPING AND PASSING THE WORD.

704. The score, explanation.—(1) The four positions of the hand—open, curved, closed, and clinched—are indicated on the four spaces of a musical staff, thus:

	Clinched.
	Closed.
	Curved.
	Open.

- (a) A *straight* line indicates a *smooth* note.
- (b) A *dotted* line indicates a *rattled* note.
- (c) A *broken* line indicates an *undulating* note.
- (d) *Full arrow heads* along a line indicate *full* breath *impulses*.
- (e) *Half arrow heads* along a line indicate *gentle* breath *impulses*.
- (f) Intervals, or rests, are marked thus |, with the numeral of the seconds above, if more than one second is necessary; otherwise, notes are slurred smoothly.
- (g) The number of seconds each pipe should be given under normal conditions is marked above the bar, but circumstances often call for the signal to be shortened.

(2) (a) Smooth notes are made as any ordinary whistle is blown and are simply raised or lowered by the lung force used.

(b) Rattled notes are made by the ballarding of the tip of the tongue against the roof of the mouth, imitating a whistle rattled by a pea.

(c) Undulating notes are made by a combination of the tongue slightly undulating while the throat checks the lung pressure or flow of breath, causing the sound to undulate smoothly but continuously at equal intervals.

705. The use of the voice in passing the word.—The tone of voice in passing of the word should be modulated and pitched as the occasion calls for. The rising inflection should be given to such calls as "All hands," "Up all hammocks," etc., and the lowering inflection should be given to such calls as "Down all bags," "All the watch," etc.

706. Pipes and their uses.—

(1) *Call mates*.—Piped by the ship's boatswain to assemble his mates.

(a) Call in clinched position and sound as "peep peep," "peep peep," short and shrill with a pause of less than one second after the first two peeps.

	1	2	1	
Clinched	—	—	→	.
Closed				
Curved				
Open				

(b) This is answered by all the mates as they close on the point of assembling to receive the order to be passed from the boatswain or his chief mate, who blew the signal.

(2) *Stand by*.—Piped for “Set taut,” “Stand by” and “Lay in.”

The diagram illustrates four states of a hand's fingers:

- Clinched:** The fingers are tightly curled into a fist.
- Closed:** The fingers are partially bent but still visible.
- Curved:** The fingers are moderately bent.
- Open:** The fingers are fully extended.

A horizontal line at the top is marked with $1\frac{1}{2}$ and $\frac{1}{2}$, with arrows indicating the progression from Clinched to Open. The fingers are positioned along this line, with Clinched at $1\frac{1}{2}$, Closed at $1\frac{1}{2}$ to $\frac{1}{2}$, Curved at $\frac{1}{2}$, and Open at $\frac{1}{2}$.

Commence with the call in the curved position and instantly change to the clinch, causing a rising peep, and follow it with a slurred peep, short and ending sharp.

(3) *Lay up*.—Piped to send men up or aloft together.

Commence as in "Stand-by" and follow the long peep by a series of three sharp peeps with an interval of about one second between each series of peeps, and slow down the last three peeps to about equal intervals between them.

(4) *Lay out*.—Piped to "Lay out" in manning yards or rail; also for "Trice up" and "Out booms."

	1	2	
Clinched			
Closed			
Curved			
Open			

As in "Stand-by" excepting that the first peep is but about half the length of the second one and is pitched higher on the start. The interval of time is about the same as the verbal order, and, in fact, should be so timed.

(5) *Word to be passed.*—Piped to command silence preliminary to passing an order or the word about information.

	10
Clinched	
Closed	
Curved	
Open	

(a) Call in the closed position and clinch within a second. Impulse the shrill call with the lung force about three times and end sharp.

(b) The length of this pipe should not be less than 5 nor more than 10 seconds. Sing out the words, "D'ye hear there," then wait for all hands to silence and pass the word as given by the officer of the deck.

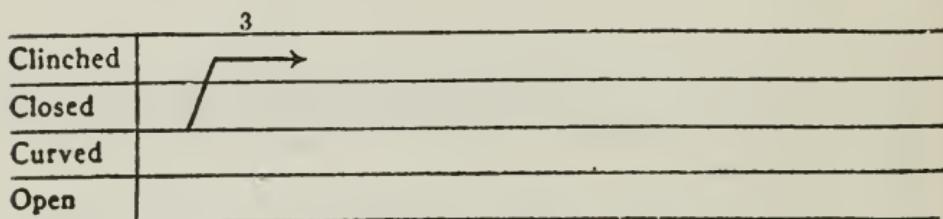
(6) *Hoist away.*—Piped in hoisting boats, in hoisting generally, and in the walk away with the cat or fish falls; and is always preceded by the pipe "Set taut."

	10
Clinched	
Closed	
Curved	
Open	

(a) Same as No. 5, excepting that the shrill is not impelled and the shrill is softened by changing the position from clinched to curved, and the lung pressure is lessened so as to finish low and soft, instead of sharp.

(b) The length of this pipe is about 10 seconds for a signal to make a long walk away in hoisting.

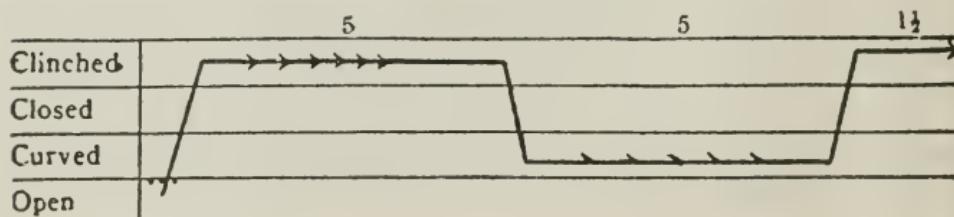
(7) *Haul.*—Piped to keep men pulling together.



(a) Call in the closed position and change to the clinched, and so timed as to sound about an equal length of time in each position; finish with a sharp shrill. Normal time about three seconds.

(b) This signal is used at such times as the men are facing their work at a standstill and in position for a pull together. The low note of the signal is "Stand-by," and the shrill note "Pull." This is repeated as often as the signal is blown and the length of the shrill note signifies the strength and amount of rope to be gained in the pull, so that as the signal is shortened it becomes the first note of the "Short belay."

(8) *Belay.*—Piped to avast hauling and make fast; and also to annul an order just piped.

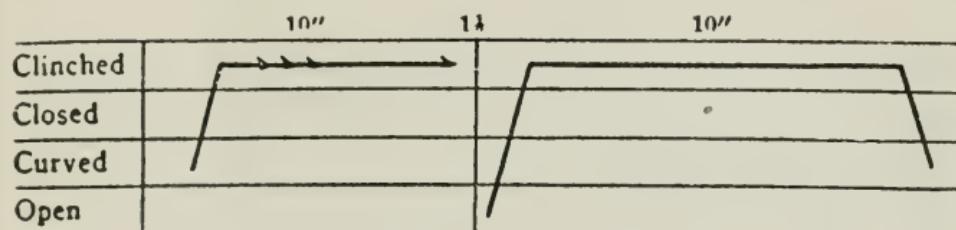


(a) Call open; close sharply to the clinch and impulse with the tongue to the roof of the mouth about six times while holding the first shrill of about five seconds; then change to the curved and impulse softly with the breath and tongue to cause a smooth, undulating sound for about the same interval as the impelled shrill; then clinch sharply and finish with three shrill slurred peeps in rapid succession.

(b) This is the most difficult pipe to blow, owing to the contraction of it. The "Short belay" is more uniform in sound, as it really grows out of the "Short haul." The "Short belay" means "Hold fast."

(9) *All hands*.—Piped as a "general" for all events calling upon "all hands"; also for calling the first, mid and morning watches.

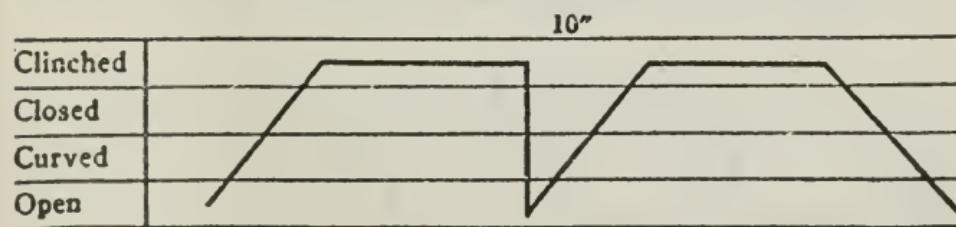
Close to the clinched and impulse softly about three times, holding the shrill for 10 seconds, ending sharp, then again close to the clinched



softly and hold the second shrill for 10 seconds and allow it to fall softly to a finish for three seconds.

(10) *Boat call*.—Piped to call away a boat; also to call a division or divisions to quarters.

(a) Call in the open, close to the clinched, hold the shrill for five seconds, then open and close again to the clinch and hold the second shrill for another five seconds, then open and allow the signal to end softly, allowing about three seconds for the fall to silence.



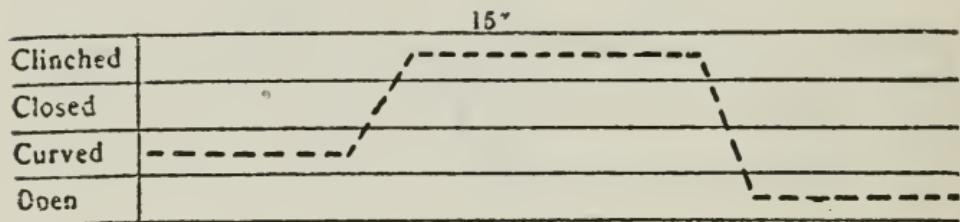
(b) All hands should listen to this pipe, as the boatswain's mate is to sing out in a long-drawn "Away" the boat that is to be manned; and he should use the word "away" a second time in the call of the barge or the gig; such as "Away, barge (or gig), Away." Etiquette requires that both the pipe and the word, when calling away the barge or the gig, should be full lengthened. The pipe and the word for other boats are not to be so long.

(c) In calling a division or divisions to quarters, follow with "All the division—to quarters."

(d) The boatswain's mate looks for silence as in after the "Word to be passed" pipe, and then pitches his voice in a roaring song, raising it to its full power on the first word of the call, and lowering it on the last syllable of the last word.

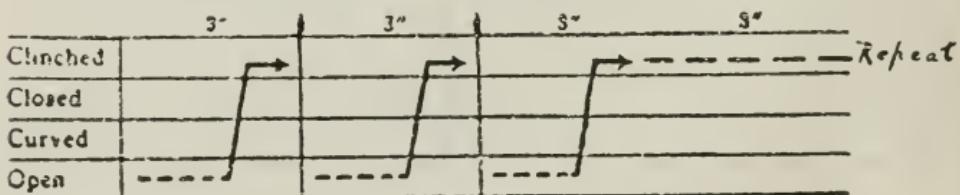
(e) The interval of the song is about equal to the interval of the call.

(11) *Heave around*.—Piped for "Mess gear"; also to heave around a capstan.



(a) Call in the curved, and blow very softly with an undulating sound by checking the breath with the throat, allowing the tongue to slowly undulate; then in the clinched position, increasing the rapidity of the undulations from about the same interval as during the rising; then allow the sound to fall back to the soft, low tones of the start.

(b) Make a double heave around for the capstan, and a single long heave around for mess gear; but the interval of the double heave around should not exceed that of the single heave around.



(12) *Sweepers*.—Pipes all sweepers to start their brooms and clean out spit kits.

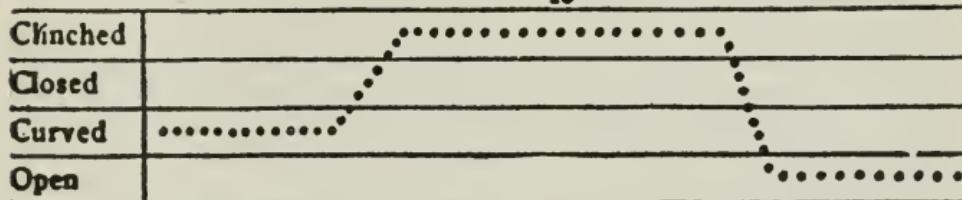
(a) Commence as in "Heave around" and close sharply to a short shrill. Repeat this three times and finish with four or five sharp peeps from the closed to the clinched in rapid succession. Repeat this from its commencement, but instead of finishing with the sharp peeps, make the sound more like an impaled shrill as though slurring the peeps.

(b) If necessary, the boatswain's mates follow with the word "Clear up the decks for quarters."

(13) *Veer*.—Piped to "Ease away," "Walk back," and "Slack away." A slurred veer calls side boys to "tend the side"; one veer, two side boys; two veers, four side boys; three veers, six side boys; four veers, eight side boys.

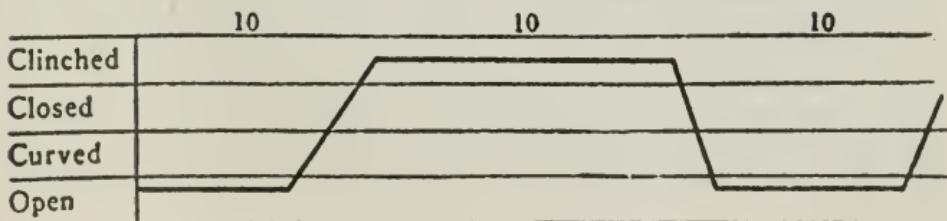
(a) Call in the curved and blow to imitate a whistle rattled by a pea. This rattling sound is produced by ballarding the tip of the

15"



tongue against the roof of the mouth; and the rapidity of the ballarding is in proportion to the pitch of the sound, rising to the maximum in the shrill rattle.

(b) For walking back the falls, this pipe is sounded continuously during the walk back or the lowering from a belay; and the speed of the lowering is in proportion to the undulations of the pipe, or the rapidity of its rising and falling in sound caused by changing from curved or open to clinched, sometimes accentuated by impulsing with the throat; short peeps of it indicate to "lower handsomely" for a short distance as in the case of fouling while lowering.



(c) At the finish of the lower or at the "come up," the signal is finished with a short, sharp peep as in the finish of "Pipe down."

(14) *Piping the side*.—Accompanies appropriate side honors.

(a) Fill the lungs, commence with the lowest smooth note and rise to the shrill, then fall to the low note again and finish with a low, soft shrill.

(b) The time in rising to the shrill should be about equal to the time of holding the shrill, and the time of falling from the shrill

should be about one-third less than that of rising, so that the time of rising, holding, and falling to a finish are about equal.

(c) The pipe "Alongside" is started in time to finish as the boat makes the gangway.

(d) The pipe "Over the side" is started in time to finish it when the visitor is greeted by the officer of the deck. At the first note of this pipe, the boatswain's mate takes station in rear of the proper inboard side boy and all side tenders come to the "Salute," remaining at "Salute" during the sound of the pipe, and dropping to "Attention" at its last note.

(e) Upon the visitor's departure the ceremony is reversed as follows: Boatswain's mate commences the first note of "Over the side" as the visitor passes him in departing; and the first note of "Away" as the visitor's boat gathers headway and curves away from the gangway in shoving off, and this signal should be very long-drawn in the finish.

(f) In the piping of officials alongside and over, the side pipe is lengthened to full breath for officials receiving eight side boys. But short side pipes in any event are considered lubberly and contrary to the proper "etiquette of the side."

(g) For officials received with eight or six side boys, the side will be piped by the ship's boatswain. For officials received with four side boys, the side will be piped by the chief boatswain's mate. For officials received with two side boys, the side will be piped by a boatswain's mate.

(15) *Pipe down.*—(a) This pipe is a combination of the pipe "Word to be passed" and a long veer of about 10 seconds; ending in a sharp, short peep, with an interval of 1 second between the two pipes.

(b) This signals the termination of all evolutions and ceremonies to which all hands had been called, and is blown by the boatswain's mate of the watch. After the sounding of taps, follow the "Pipe down" with "Silence fore and aft."

(16) *Pipe to (any) meal.*—(a) Pipe "All hands," long "Heave around" (mess gear) and long "Pipe down."

(b) The combined calls should cover an interval of not less than one minute.

SETTING THE WATCHES.

707. The first watch.—As preparation to calling and setting the first watch, the boatswain should first inspect the ship for the night, seeing that everything is secure. This inspection should be completed by 7.45 p. m. He then calls his mates, who, listening for his call, assemble at a designated place within easy call of the bridge. The boatswain then instructs his mates with special reference to the night routine, and the carrying out of the morning orders. At 7.50 the officer of the deck commands "Call the watch."

The boatswain leads the piping and the long-drawn chorus of, "All the starboard (or port) watch."

The chief boatswain's mate then pipes the word to be passed and calls, "Relieve the wheel and lookouts."

The mates attend to the reliefs of their own divisions, and report to the boatswain as soon as the reliefs are stationed.

The boatswain reports to the officer of the deck, "Sir, the wheel and lookouts are relieved."

The officer of the deck acknowledges with, "Very well, sir."

The officer of the deck having reported eight bells to the commanding officer, orders, "Strike eight bells, relieve the watch."

The boatswain and his mates pipe the long pipe down, and chorus "all the watch," in moderate tones.

This ends the assembly of the boatswain and his mates. The mates not on watch are free until again called for regular watches or emergency duties. The boatswain then takes his place on the right of the line of all warrant officers, and awaits the arrival of the executive officer to receive their 8 p. m. reports.

708. The night watches.—The mid and the morning watches are called by the boatswain's mate of the watch by the long "All hands" call, as for the first watch, excepting the call of these watches is in the berthing space instead of on deck; and the "rouse out, rouse out" that follows, is the mate's own method of turning the sleepers out of their hammocks.

The watches are stationed, reported, and relieved by the boatswain's mate of the watch, in the same manner as the first watch was set by the boatswain.

After piping down the watch on deck, the boatswain's mate of the watch and his relief chorus the soft, "all the watch," then the relief boatswain's mate takes over the duties of the mate whose watch had been relieved.

709. The day watches.—The forenoon, afternoon, and dog watches are called by the word to be passed call, followed by "On deck all the port (or starboard) watch," followed by "Relieve the wheel and lookout."

PART IX. BUGLE CALLS.

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BUGLE CALLS.

BUGLE CALLS IN GENERAL.

801. General remarks.—(1) The music in the following pages gives the authorized bugle calls, drill signals, and the most common marches used in the United States Navy.

(2) Particular attention is necessary that all buglers be required to maintain the pitch of all bugles in the key of G. The standard Navy bugle is pitched in the key of G. There is nothing so distressing as a number of the bugles of the fleet sounding off, pitched variously.

(3) The bugle calls and drill signals will conform strictly to the music as herein printed, and the various calls will be used only for the purpose indicated under the explanations and definitions. Particular attention must be given to *time*. While the employment of the bugle for any particular occasion is not mandatory, it is important that the calls always have the same signification.

(4) All buglers and trumpeters are instructed in sounding a number of marches, both quickstep and double, but it is considered sufficient to embody only a few of these in the music. These are sufficient for reference, though others may be used if desirable. In regard to the double time, any six-eight quickstep may be used as a double time by playing it more rapidly. (See Quicksteps Nos. 4 and 5.)

(5) Infantry and artillery calls, and certain routine and miscellaneous calls, are identical in the Army and Navy.

(6) Certain calls, which are primary infantry or artillery calls, have been adapted to additional uses on shipboard, as indicated in the table.

(7) Most calls are sounded by one bugler or trumpeter, but such general calls as *colors* (both morning and evening), *reveille*, *tattoo*, *taps*, *general quarters*, *abandon ship*, the *assembly*, *flourishes*, and *ruffles* are sounded by all the field music simultaneously.

(8) The table below gives a list of the approved bugle calls of the United States Navy, together with a brief description of the use of each, and the name of the call when used in the United States Army. Many of the calls given herein are not used frequently on board ship, being supplanted by signals given by the pipe, by word of mouth, or telephone.

802. Routine Calls.—

[NOTE.—The number in second column is the number of the call in the list of appended music.]

Navy call.	Number of call.	Explanation of use.	Army call.
Reveille.....	1	Beaten or sounded when all hands are called in the morning. "All hands" is piped immediately after the call is finished.	Reveille.
Tattoo.....	2	Beaten or sounded in port as a signal for silence to be maintained about the decks. It is followed immediately by "pipe down," and about three minutes later by taps.	Tattoo.
Taps.....	3	Sounded about three minutes after "pipe down." It is a signal for all men to <i>turn in</i> for the night and maintain silence.	Taps.
First call.....	4	Sounded five minutes before morning and evening colors, and tattoo. It calls buglers to assemble, and also is a warning signal to others who participate in the evolution, such as quartermaster electricians, lamp-lighters, etc. It may also be used as a preliminary call at other times when it is desired to assemble the buglers.	Assembly of trumpeters.
Morning colors	5	The flag leaves the deck at the first note. On board ship only the first part of the call is sounded. On shore the whole call is sounded.	To the color.
Evening colors....	6	The flag leaves the truck or peak at the first note.	Retreat.
Officers.....	7	Sounded five minutes before a formation at which officers must be present. It is also used at other times, when specially provided for, such as to call all officers to assemble at a certain designated point.	Officers' call.
Assembly.....	8	Signal for divisions to assemble for muster.	Assembly.
Drill.....	9	Signal to assemble for drill; or if already assembled, to proceed with the drill or exercises.	Drill call.
Secure.....	10	Signal to <i>secure</i> , used after battle drills and emergency drills.	
Recall.....	11	Sounded to recall men who are out of the ship for drill or for exercise, such as at boat drill, infantry or artillery on the dock, in swimming, etc.	Recall.
Dismiss (retreat from drill).	12	Signal to dismiss from drill. Sounded after <i>secure</i> or sounded alone after division drills.	

Navy call.	Number of call.	Explanation of use.	Army call.
Sick.....	13	Usually sounded between 8 and 9 a. m. and in the afternoon as a signal for men requiring medical attention to report at the sick bay.	Sick.
Band.....	14	To call the band to the quarter deck.	
Full guard.....	15	Calls the whole guard to the quarter deck.	First sergeant's call.
Sergeant's guard ..	16	First two bars of full guard call. Calls petty officer's guard to the quarter deck.	
Mess gear	17	A signal to spread mess gear	Mess.
Provisions	18	Sounded as a signal that provisions are about to be served out. Also used as a signal to equip and provide boats for abandon ship.	Issue.
Attention (or silence).	67	When sounded for a passing vessel it is a positive command for every man in sight from outboard to stand at attention in his tracks, facing the passing vessel. If used at drill or fleet maneuvers, it is an order for every one to stand at attention and maintain silence.	Attention.
Carry on.....	19	Sounded after <i>silence</i> , is a signal to resume conditions existing before <i>silence</i> was sounded.	
Hammocks.....	20	Is a signal for every man using a hammock to fall in abreast his hammock, and maintain silence.	
Clean, bright work	21	Signal to clean assigned bright work....	
Knock off bright work.	22	Signal to stow away all cleaning gear....	
Water-tight doors.	23	Signal to secure the ship below the water line for the night, during maneuvers or in fog.	
Inspection.....	24	Signal for captain's (executive's) weekly inspection of holds and store-rooms and lower decks. To be sounded also following captain's Saturday morning inspection of crew, as signal for lower deck men to lay below preparatory to captain's inspection of lower decks.	
Liberty party.....	25	Calls liberty party to form for inspection.	
Light smoking lamp.	26	Signals permission for the crew to smoke.	
Out smoking lamp	27	Signals knock off smoking.....	

803. Miscellaneous calls.—

[NOTE.—The number in second column is the number of the call in the list of appended music.]

Navy call.	Number or call.	Explanation of use.	Army call.
Torpedo-defense quarters.	28	This call, on board ship is the signal for <i>Torpedo defense quarters</i> ; on shore it is the signal <i>to arms</i> .	To arms.
General quarters.	29	Signal for every man to go to his station for general quarters, and to <i>Cast loose and provide</i> .	
Abandon ship.....	30	The signal to get out and man boats for abandon ship and to shove off.	General (abbreviated).
Fire quarters.....	31	Sounded simultaneously with the ringing of ship's bell. One blast, fire forward; two blasts, aft. Usually followed by <i>assembly</i> which is a signal for men to fall in at quarters for muster when their duties are completed.	Fire.
Swimming.....	32	Signal to prepare for swimming, put on trunks, etc.	
Go in water.....	33	Signal to go in the water for swimming. Sounded after boat is in position and boom lowered. Sometimes called "overboard."	
Church.....	34	Sounded as a signal that church is rigged, and that divine service is about to be held. It is followed by tolling the ship's bell.	Church.
Flourished.....	35	Are sounded on the bugle as a mark of respect to officials of high rank, etc., the number in this case never in excess of four, depending on the rank of the official.	Flourished for review.
Ruffles.....	36	Are beaten on a drum, accompanying flourishes, and in the same number in each case.	Ruffles.
Extra duty men..	37	Signal for extra duty men to fall in at designated position.	Fatigue.
Division.....	38	Calls designated division to quarters. It is half of <i>assembly</i> followed by c notes to indicate the division.	
Man overboard....	72	A signal that there is a man overboard.	Charge.
School.....	39	On board ship, and at training stations, to call classes to their studies.	
Saluting gun crews to quarters.	40	Sounded as a signal to all concerned to make all necessary preparations to fire a salute.	Stable call.
Belay.....	41	To countermand or revoke a call just preceding it.	
Bear a hand.....	71	Same as <i>double time</i> . Used to indicate haste in obeying previous call.	Double time.
General muster...	64	All divisions assemble at "general muster."	Dress parade.

Navy call.	Num- ber of call.	Explanation of use.	Army call.
Torpedo defense fire control exercise.	42	Signal for fire control exercise, torpedo defense battery. When searchlights are to be included in the exercise, to be followed by call <i>man searchlights</i> .	
Main battery fire control exercise.	43	Signal for fire control exercise, main battery, including range finders.	
Man searchlights.	44	Followed by the number of <i>c</i> notes; it is the signal to man the searchlight or searchlights designated. Sounded without designating notes, it is the signal to man <i>all</i> searchlights.	
Man range finders.	45	Followed by the number of <i>c</i> notes, it is the signal to man the range finders or range finders designated. Sounded without designating notes, it is the signal to man <i>all</i> range finders.	
Surgeon's party...	46	Calls dressing station crews and battle stretchermen to muster at the sick bay for instruction in <i>first aid</i> .	
All signalmen.....	47	Calls all the signal crew to muster on the signal bridge.	
Working party....	48	Assembles a working detail. If necessary, to be followed by the required number of <i>c</i> notes to designate the number of hands to be furnished by each part of the ship.	
Man torpedo defense battery.	88	The same as <i>On right into line</i> . To be used at general quarters to call the torpedo defense gun crews <i>from reserve</i> .	
Torpedo defense battery in reserve.	89	The same as <i>On left into line</i> . To be used at general quarters to send the torpedo defense battery <i>into reserve</i> .	
Commence fueling.	92	Same as <i>Commence firing</i>	
Knock off fueling..	93	Same as <i>Cease firing</i>	

804. Boat calls.—

NOTE.—If there be more than one boat of a kind its number is indicated by the proper number of *c* notes following the call.

Navy call.	Num- ber of call.	Explanation of use.
Steamers.....	49	Calls away or designates the steamer indicated by the number of <i>c</i> notes.
Motor boat.....	59	Calls away or designates motor boat indicated.
Launches.....	50	Calls away or designates the sailing launch or motor launch indicated.
Cutters.....	51	Calls away or designates the cutter indicated.
Whaleboats.....	52	Calls away or designates the whaleboat indicated.
Barge.....	53	Calls away or designates the barge indicated.
Gig.....	54	Calls away or designates the gig indicated.
Dinghy.....	55	Calls away or designates the dinghy indicated. Call sounded twice.
Wherry.....	55	Calls away or designates the wherry indicated. Call sounded once.
Away all boats.....	56	Calls away all boats either for exercise or when all boats are to be used for landing, or for an armed boat expedition.
Hook on.....	57	Signal to hook on and prepare for hoisting the boat or boats whose call precedes the <i>hook on</i> . To hook on all boats, sound "Away all boats" and follow it by "Hook on".
Man the boat falls.....	58	Signal for all hands to man the boat falls which may be indicated by word of mouth or by boat call.
Race boat crew.....	60	Calls away the race boat.

805. Infantry and Artillery calls.—(1) These calls are the same, and they are used for the same purpose, as corresponding calls in the United States Army. Remarks on their use on shore are given below.

(2) Aside from the drill signals, whose use is evident from their names, the following calls, not ordinarily used on board ship, are used on shore, as, for example, with the naval brigade or a battalion in camp or in barracks.

Army and Navy call.	Number of call	Explanation of use.
Guard mount.....	61	The first or preparatory signal for guard mounting. The second call is the assembly.
Company commander's call.	62	Signal for company commanders to convene at previously designated position.
Call to quarters....	63	Used on shore in barracks or in camp as a signal for men to go to their quarters or tents. It is usually sounded about five minutes before taps, depending on regulations. In such cases tattoo will usually be sounded one-half hour before taps.
Dress parade.....	64	Warning signal for companies to form for dress parade. The signal for the companies to fall in is the assembly. Used on board ship, it is the call for all divisions to assemble at "general muster."
General.....	65	Signal for striking tents and loading wagons preparatory to marching.
Adjutant's call....	66	Signal for companies to form battalion. Immediately after this call the adjutant posts the guides of color company and that company marches on line. Used also on board ship to form battalion.

806. Remarks on the use of bugle calls on shore.—In the following remarks the Army names of the various calls are used. The call is indicated by the number abreast each, which refers to the number of the call in the music which is appended.

(1) **WARNING CALLS.**—(a) *First call* (4), *Guard mount* (61). *Dress parade* (64), and *Drill* (9) precede the *Assembly* (8) by such interval as may be prescribed by the commanding officer.

(b) *Mess* (17), *Church* (34), and *Fatigue* (37), classed as service calls, may also be used as warning calls.

(c) *First call* (4) is the first signal for formation for roll call and for all ceremonies except guard mounting.

(d) *Guard mount* (61) is the first signal for guard mounting.

(e) The field music assembles at *First call* and *Guard mount*.

(2) **FORMATION CALLS.**—(a) *Assembly* (8): The signal for companies or details to fall in.

(b) *Adjutant's call* (66): The signal for companies to form battalion, also for the guard details to form for guard mounting on the camp or garrison parade ground; it follows the assembly at such interval as may be prescribed by the commanding officer.

(c) *To the color* (5) is sounded when the color salutes; it is also used as the signal for the battalion to form brigade.

(3) **ALARM CALLS.**—(a) *Fire call* (31): The signal for the men to fall in, without arms, to extinguish fire.

(b) *To arms* (28): The signal for the men to fall in, under arms, on their company parade grounds as quickly as possible.

(4) **SERVICE CALLS.**—(a) *Tattoo* (2), *Taps* (3), *Mess* (17), *Sick* (13), *Church* (34), *Recall* (11), *Officers* (7), *Company commanders* (62), *1. p. o.'s* (15), *Fatigue* (37), *School* (39), and the *General* (65).

(b) *Reveille* (1) precedes the *Assembly* (8) for roll call; *Retreat* (6) follows the *Assembly*, the interval between being only that required for formation and roll call, except when there is parade.

(c) *Taps* (3) is the signal for extinguishing lights; it is usually preceded by *Call to quarters* (63) by such interval as prescribed by regulations.

(d) *Assembly*, *Reveille*, *Retreat*, *Adjutant's Call*, *To the color*, *The flourishes*, *Ruffles*, and the *Marches* are sounded by all the field music united; the other calls, as a rule, are sounded by the musician of the guard or orderly musician, he may also sound the assembly when the musicians are not united.

(e) *The morning gun* is fired at the first note of *Reveille*, or if marches be played before reveille, it is fired at the commencement of the first march.

(f) *The evening gun* is fired at the last note of *Retreat*.

807. Drill signals.—(See calls 67 to 105.)

(1) The drill signals include both the preparatory commands and the commands of execution; the last note is the command of execution.

(2) When a command is given by the bugle, the chiefs of subdivisions give the proper commands orally.

(3) The memorizing of these signals is facilitated by observing that all signals for movements to the *right* are on the *ascending scale*, that the signals for the same movements to the *left* are corresponding signals on the *descending scale*; that changes of gait are all on the same note; that *c. c.'s call* is the first two bars of *Officers' call* with the *Attention* added.

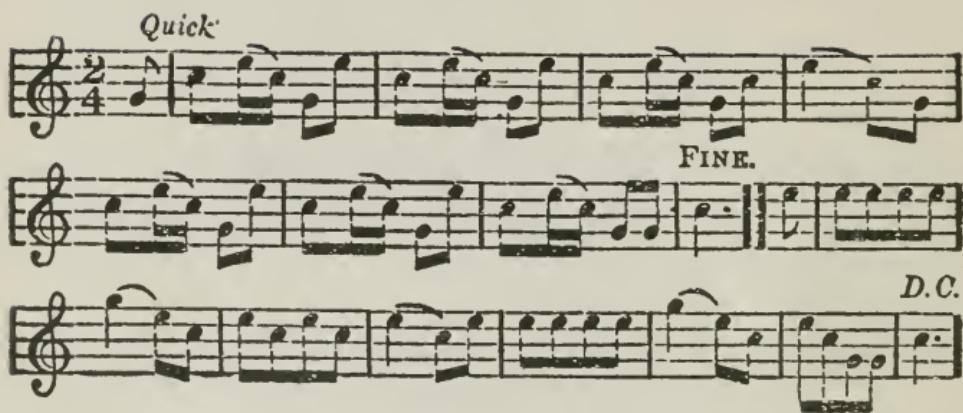
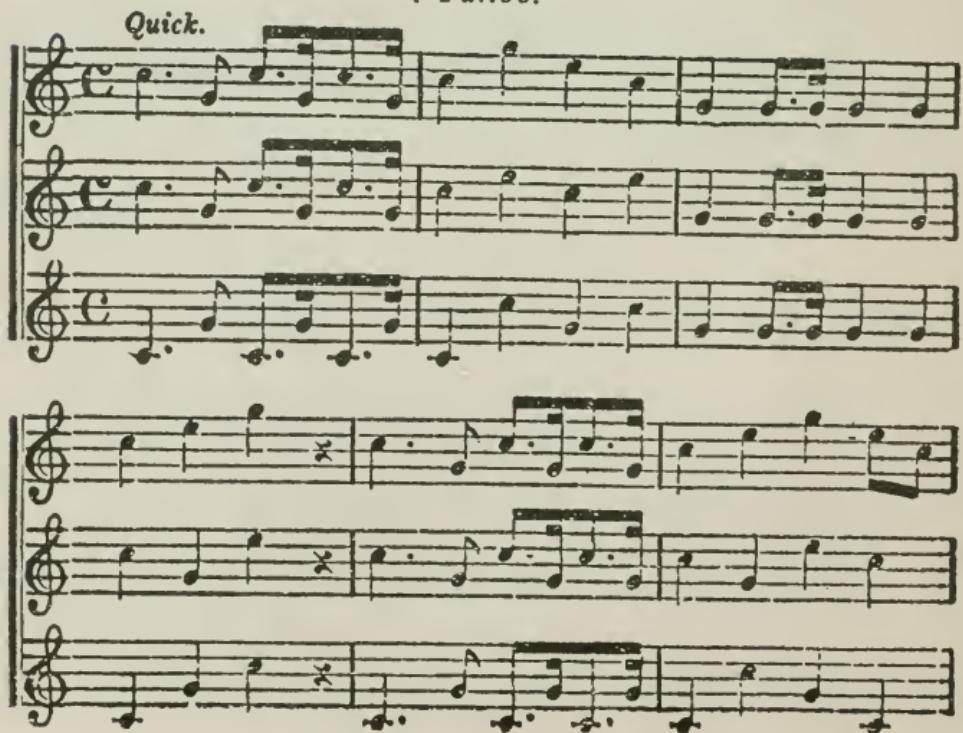
(4) The various calls are given in the music. The meaning of each is apparent from its name; 76 and 77 are preparatory signals to indicate simultaneous movements by companies or battalions.

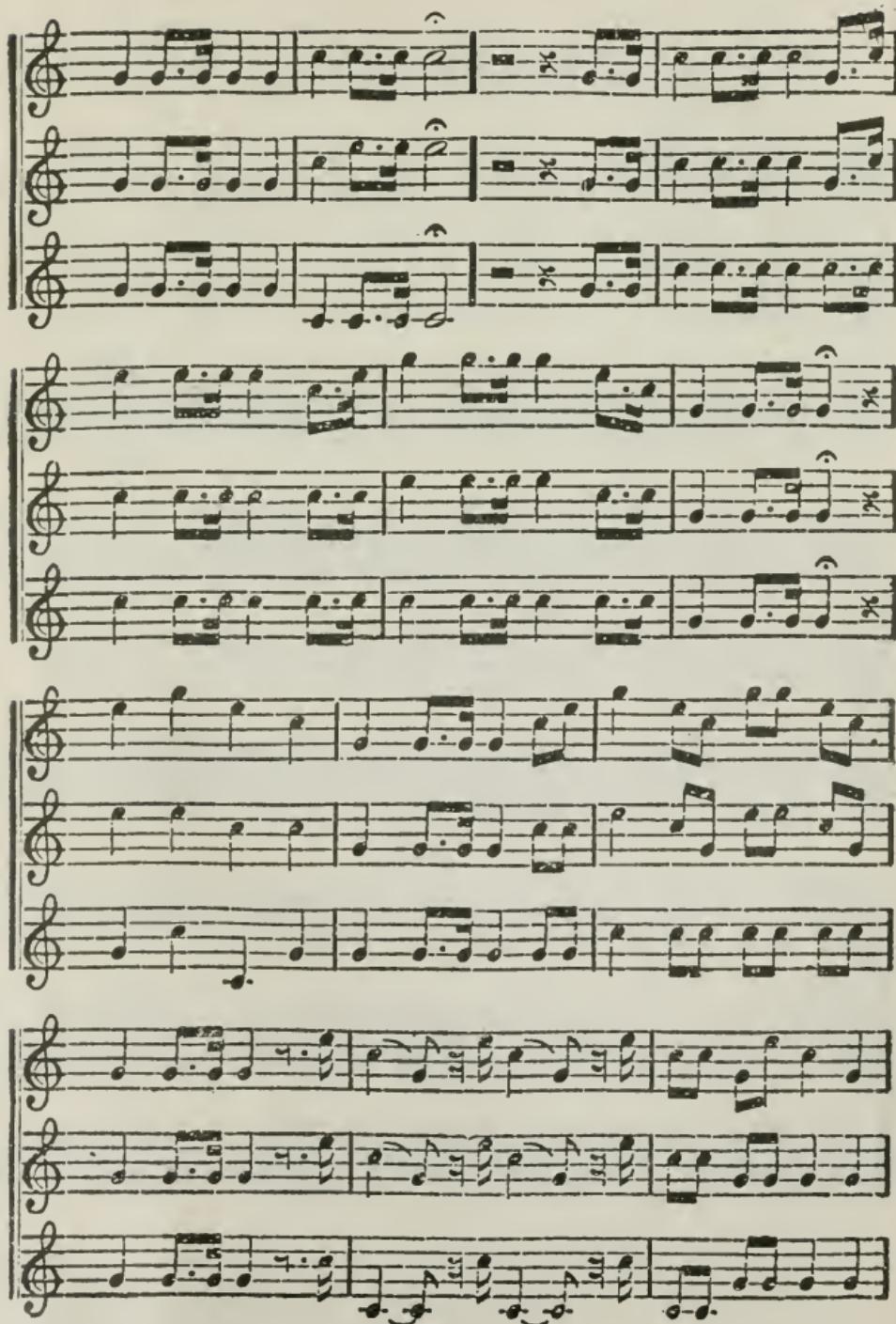
808. Marches and quicksteps.—

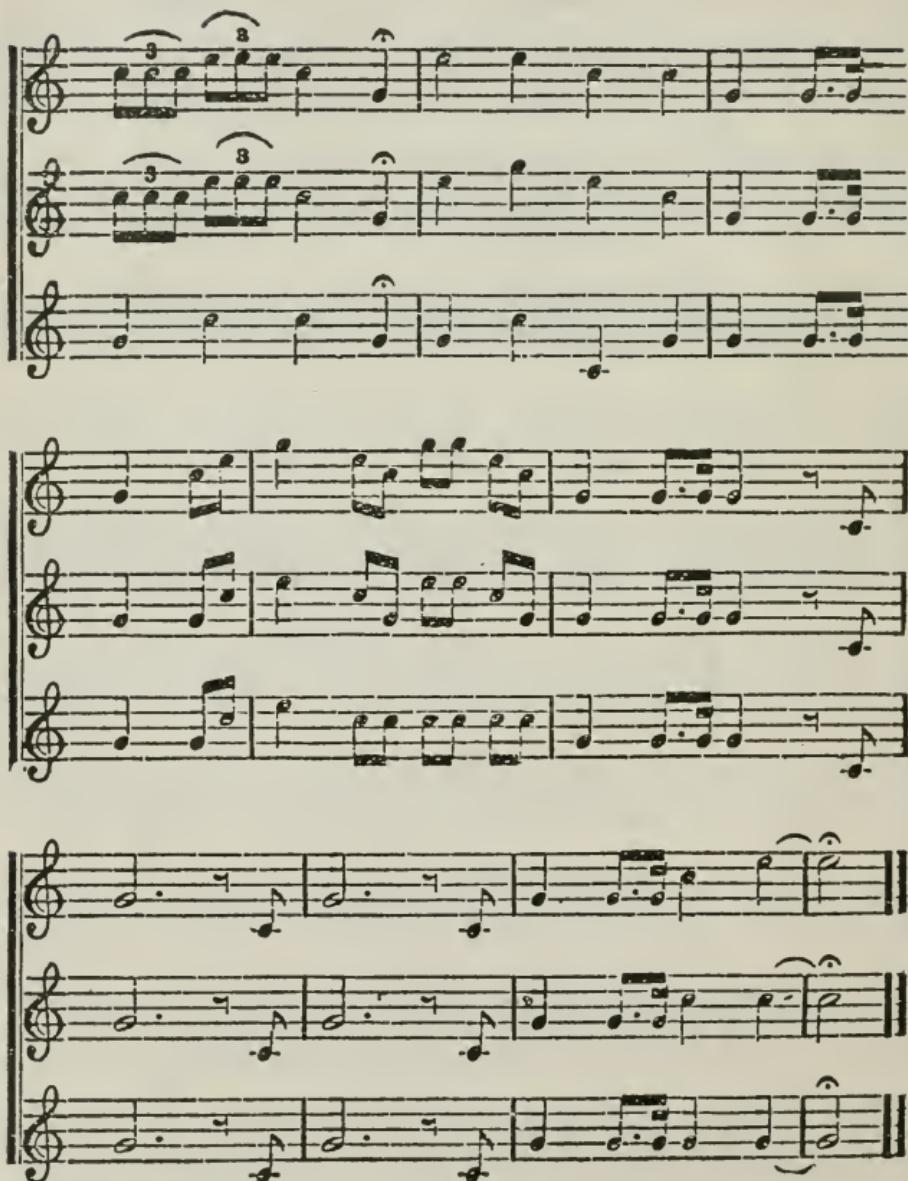
Navy call.	Number of call.	Explanation of use.
President's March.	106	Played when President visits a ship of war.
Commander in	107	Played when a flag officer comes on board officially.
Chief's March.		Same as the Army General's March.
Rogue's March....	108	Played when a thief or other man is expelled from camp in disgrace.
Funeral March....	109	Played at funerals.
Quickstep No. 1....	110	Played as a march.
Quickstep No. 2....	111	Do.
Quickstep No. 3....	112	Do.
Quickstep No. 4....	113	Played as a march; also as a double.
Quickstep No. 5....	114	This is an ordinary 6/8 quickstep but is generally used as a double by playing it more rapidly.
Quickstep No. 6....	115	March. Also a double.
Quickstep No. 7....	116	March (Army).
Quickstep No. 8....	117	Do.
Quickstep No. 9....	118	March (Sousa).

BUGLE CALLS USED ON BOARD SHIP.

809. Routine calls.—

1. *Reveille.*2. *Tattoo.*

Tattoo.—Continued.

Tattoo.—Continued.

3. Taps.

Slow.

The image shows the first eight measures of the musical score for 'The Star-Spangled Banner'. The key signature is common C, and the tempo is marked 'Slow.'. The melody begins with a half note, followed by a quarter note, an eighth note, and a sixteenth note. This pattern repeats with slight variations in the rhythm and pitch. The vocal line consists of eighth and sixteenth notes, with some sustained notes and rests.

A musical score for 'The Star-Spangled Banner' in G major and common time. The melody is shown in a single staff with a treble clef. The notes are primarily eighth and sixteenth notes, with a few quarter notes. The lyrics are not written below the staff.

4. First-Call.

Quick.

5. Morning Colors.

Quick time.

A musical score for 'The Star-Spangled Banner' in G major. The vocal line is in soprano C-clef, and the piano accompaniment is in bass F-clef. The vocal part begins with a melodic line consisting of eighth and sixteenth notes. The piano part features a harmonic bass line with sustained notes and eighth-note chords.

FINE.

The image shows the ending section of the first piano part of a musical score. It consists of two staves. The top staff is in common time and has a treble clef. The bottom staff is in common time and has a bass clef. The music concludes with a final cadence and a 'FIN.' (finished) marking.

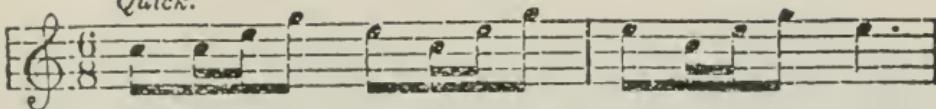
D. C.

6. *Evening Colors.**Moderato.*

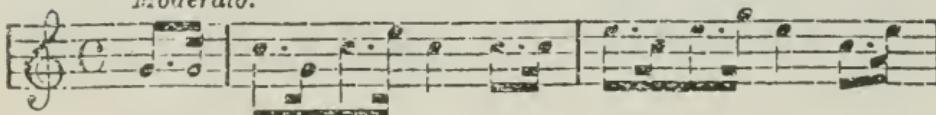
The musical score consists of 12 staves of music, each with a treble clef and a key signature of one sharp (F#). The time signature is 2/4 throughout. The music is divided into measures by vertical bar lines. The notation includes various note values such as eighth and sixteenth notes, and rests. Some measures feature thick black horizontal strokes under specific note heads, likely indicating a performance technique like a sustained note or a specific attack. The overall style is that of a military or naval drill march.

7. *Officers.*

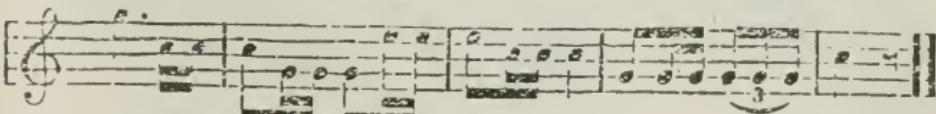
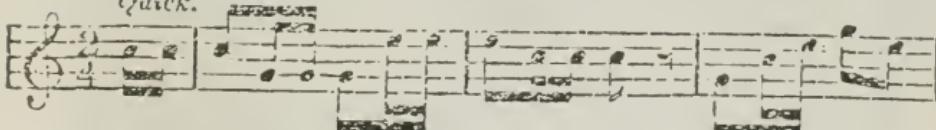
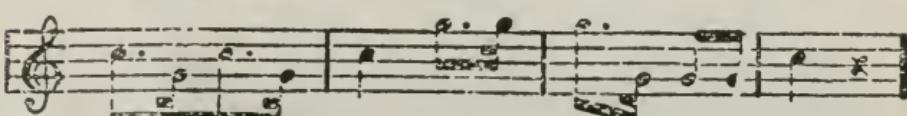
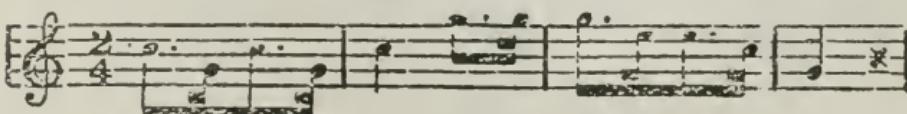
Quick.

8. *Assembly.*

Moderato.

9. *Drill.*

Quick.

10. *Secure.*

11. Recall.

Moderato.

12. Dismiss (Retreat from Drill).

Quick.

13. Sick.

Quick.

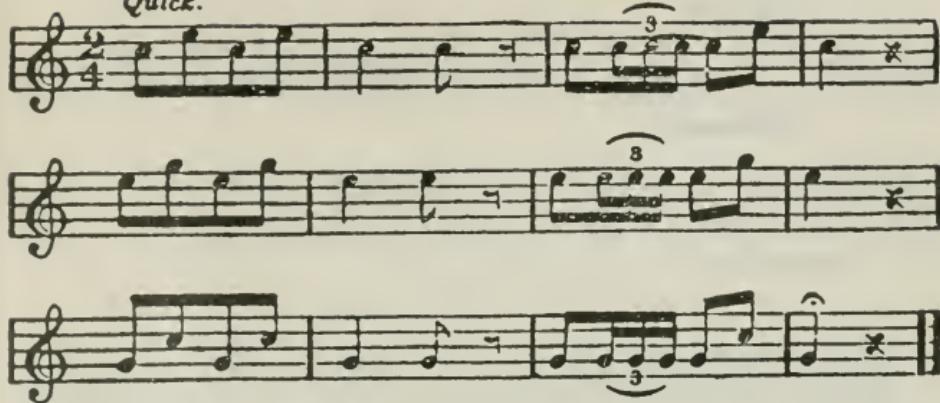
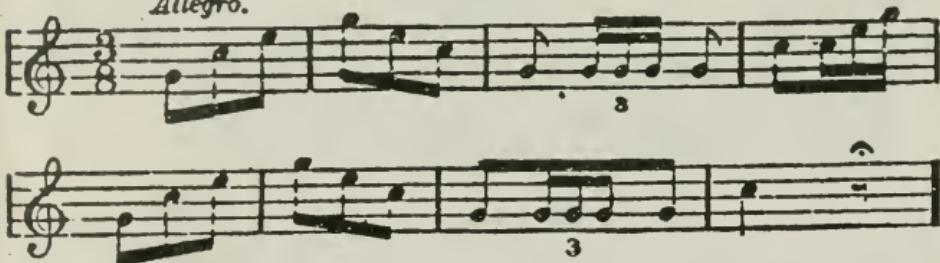
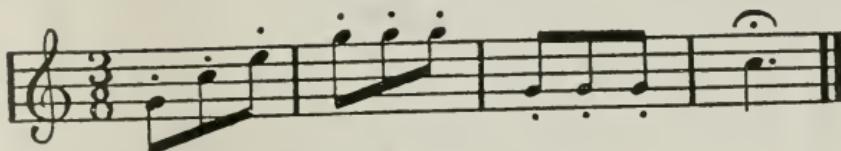
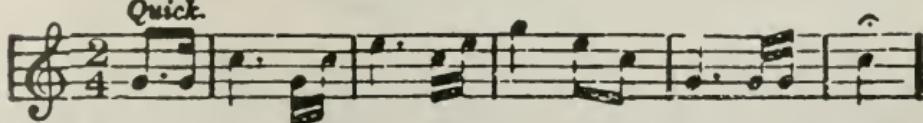
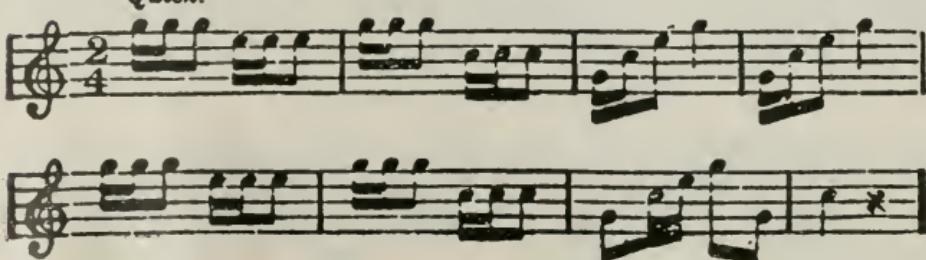
14. Band.

15. Full Guard.

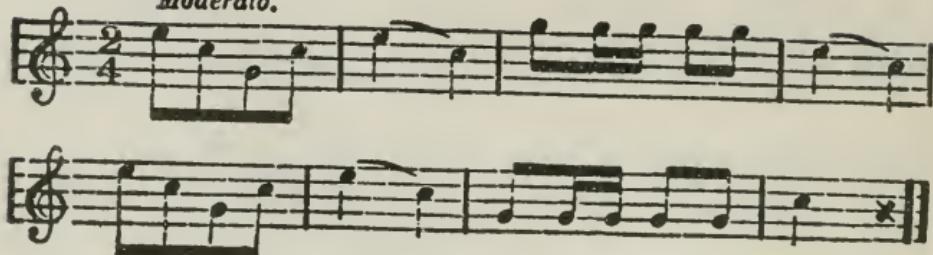
Quick.

16. Sergeant's Guard.

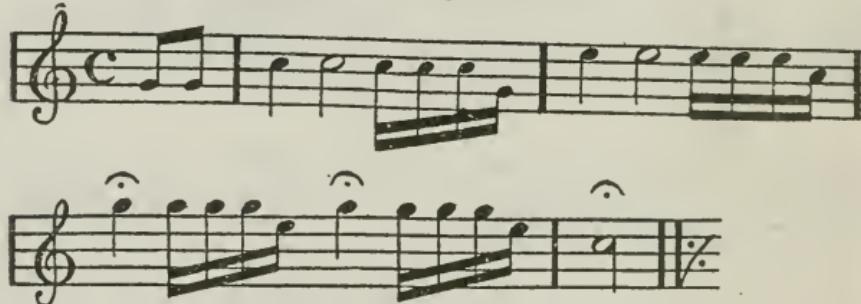
Quick.

17. *Mess Gear.**Quick.*18. *Provisions.**Allegro.*19. *Carry On.*20. *Hammocks.**Quick.*21. *Clean Bright Work.**Quick.*

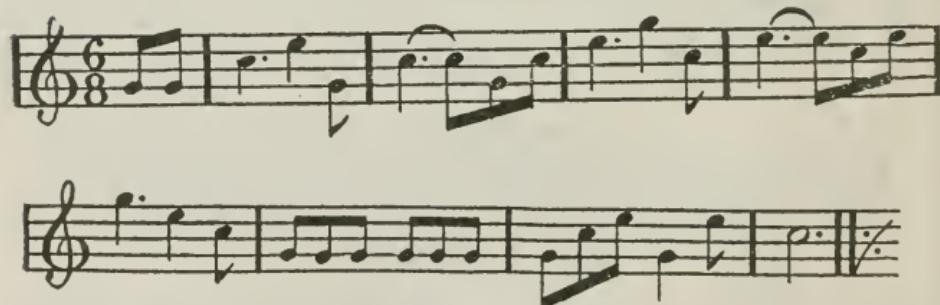
22. Knock-Off Bright Work.

Moderato.

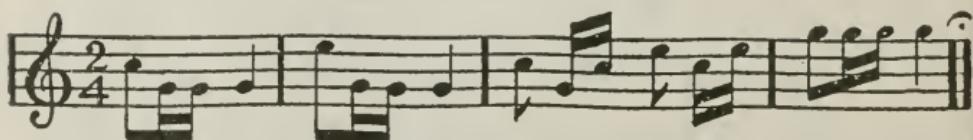
23. Water Tight Doors.



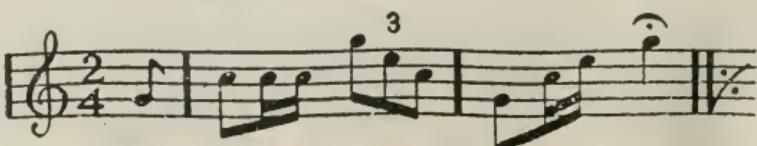
24. Inspection.



25. Liberty Party.

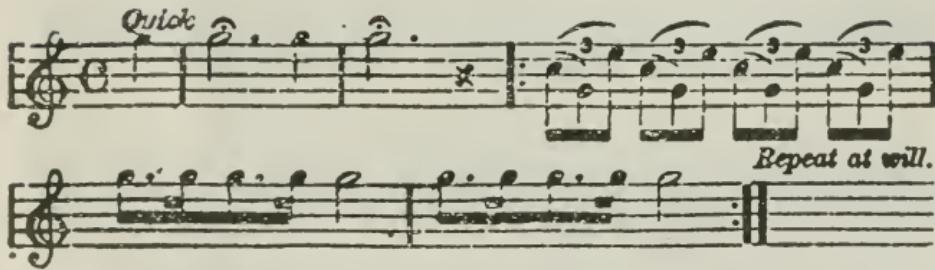
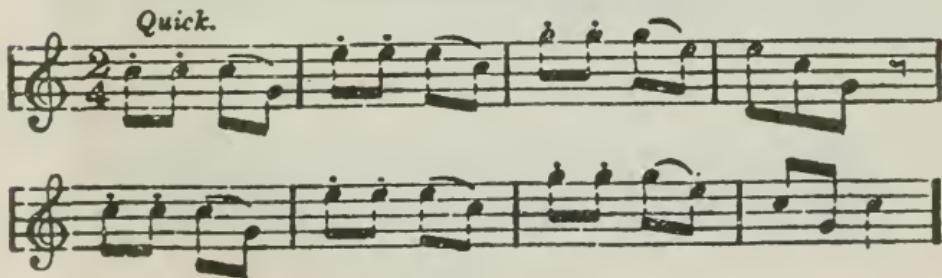
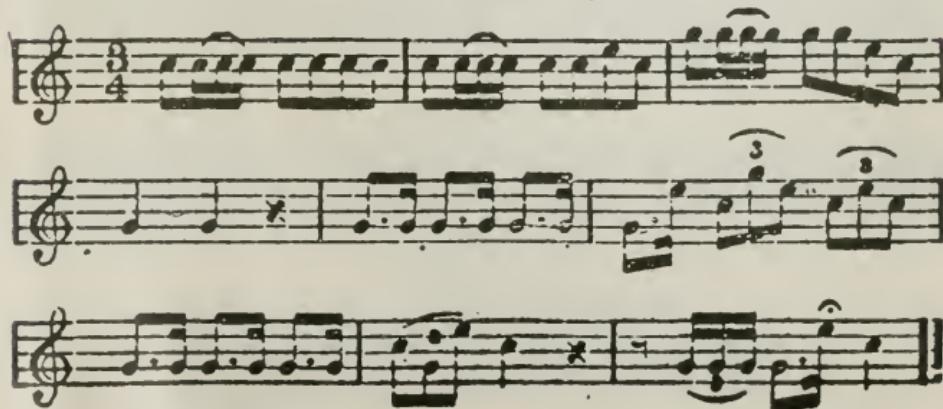


26. Light Smoking Lamp.



27. *Out Smoking Lamp.*

810. Miscellaneous calls.—

28. *Torpedo Defense Quarters.*
(*To Arms.*)29. *General Quarters.*30. *Abandon Ship.*

31. *Fire Quarters.*

Quick.

Repeat at will.

32. *Swimming.*

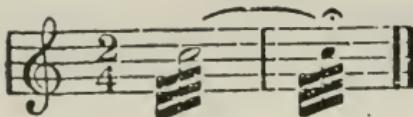
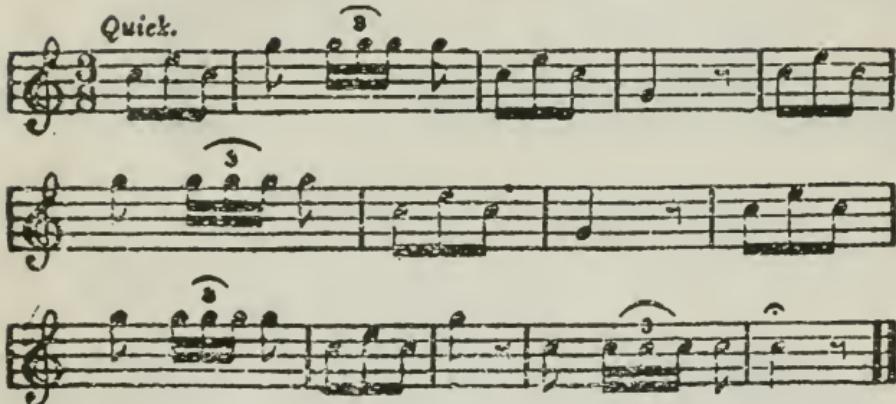
33. *Go in the Water (Overboard).*

34. *Church.*

Slow.

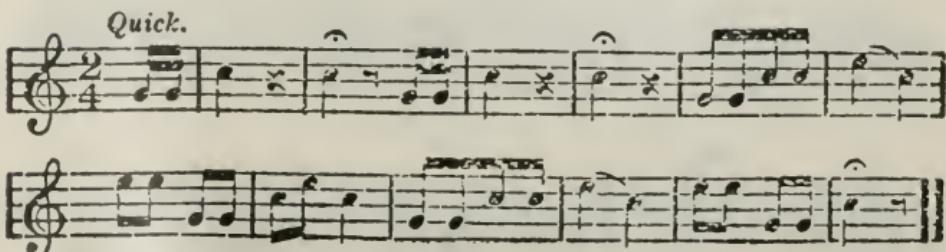
35. *Flourishes.*

Quick.

36. *Ruffles (for the Drum).*37. *Extra Duty Men.*38. *Division.*

Note.—Sounded once, followed by one or more *c*. notes to indicate division.

Moderato.

39. *School.*

40. *Saluting Gun Crews to Quarters.*

8 : *End.*

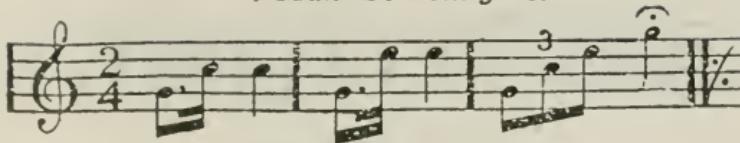
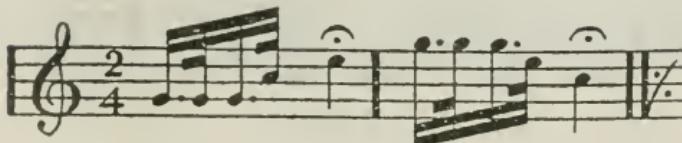
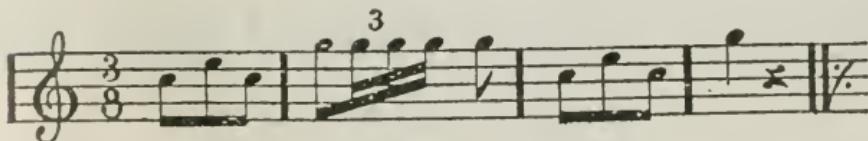
D. 7

41. *Belay (to Revoke a Call).*

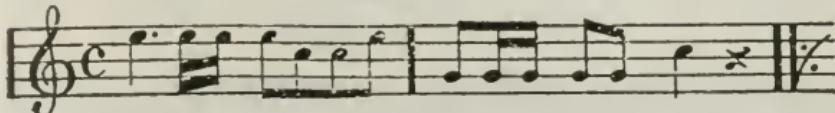
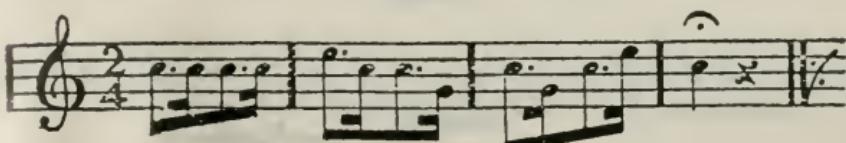
Note.—Repeat the call, if necessary, and then sound *belay*.

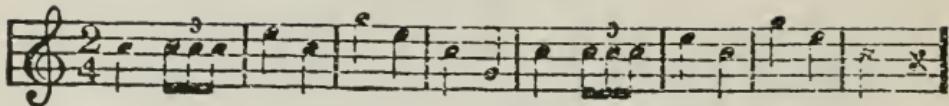
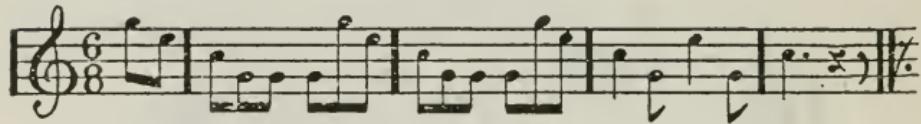
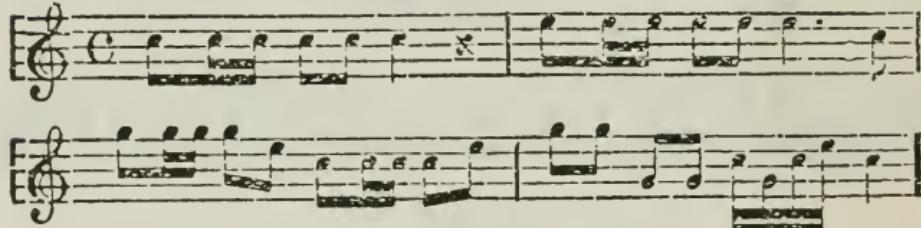
42. *Torpedo Defense Fire Control Exercise.*

43. *Main Battery Fire Control Exercise.*

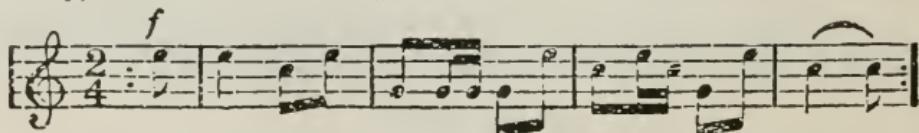
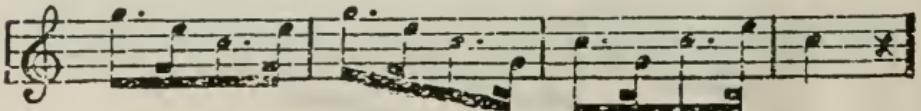
44. *Man Searchlights.*45. *Man Range Finders.*46. *Surgeon's Party.*47. *All Signalmen.*48. *Working Party.*811. *Boat calls.*—

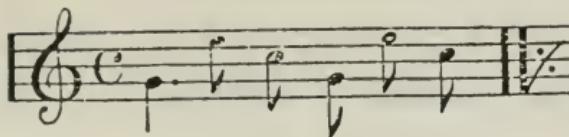
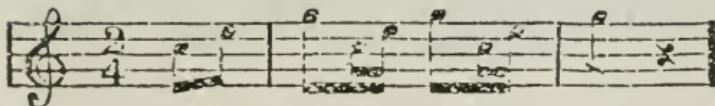
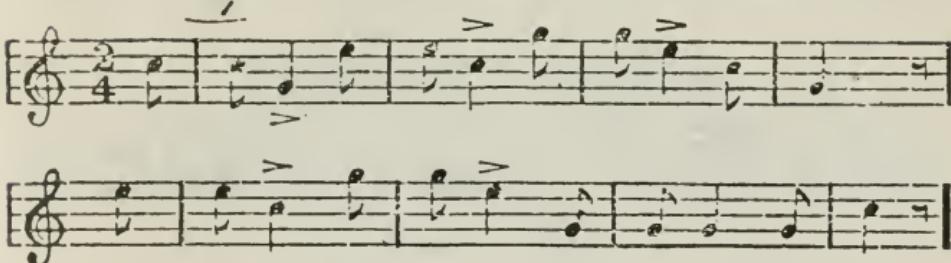
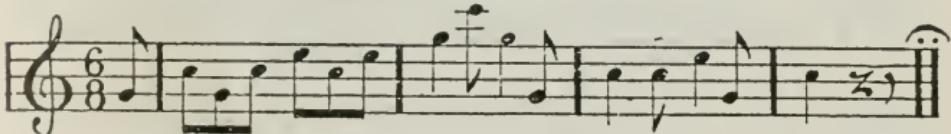
Note.—If there be more than one boat of a kind its number is indicated by the proper number of *c* notes following the call.

49. *Steamers.*50. *Launches.*

51. *Cutters.*52. *Whaleboats.*53. *Barge.*54. *Gig.*55. *Dinghy (or Wherry).*

Note.—To call away dinghy sound this call twice. To call away wherry, sound this call once.

56. *Away All Boats.*

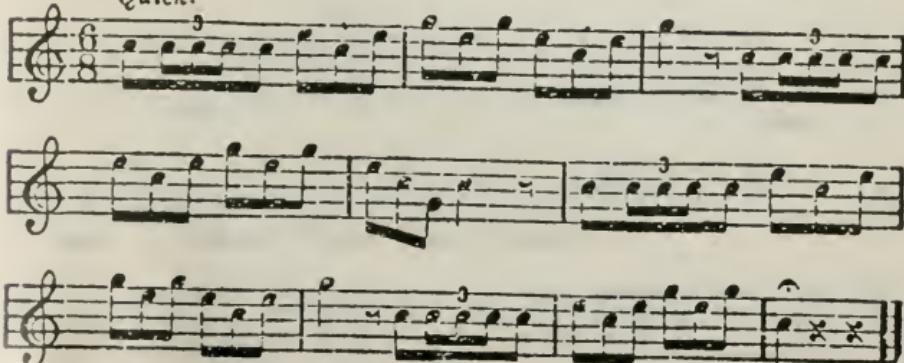
57. *Hook On.*58. *Man the Boat Falls.*59. *Motor Boat.*60. *Race Boat Crew.*

INFANTRY AND ARTILLERY CALLS.

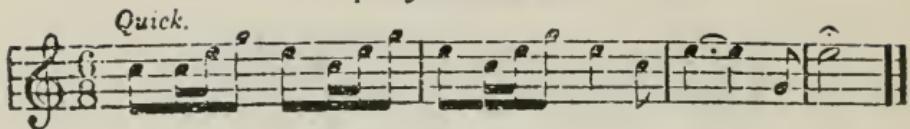
812. Calls used mainly on shore.—

61. *Guard-mount.*

Quick.

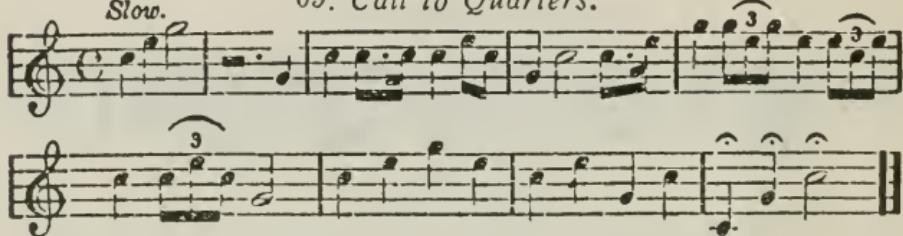


62. Company Commander's Call.



Slow.

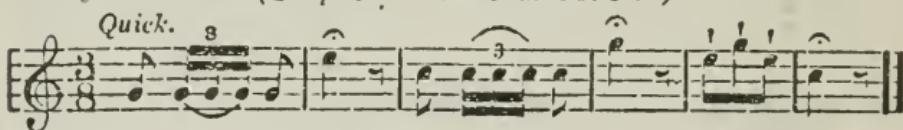
63. Call to Quarters.



64. Dress-Parade.

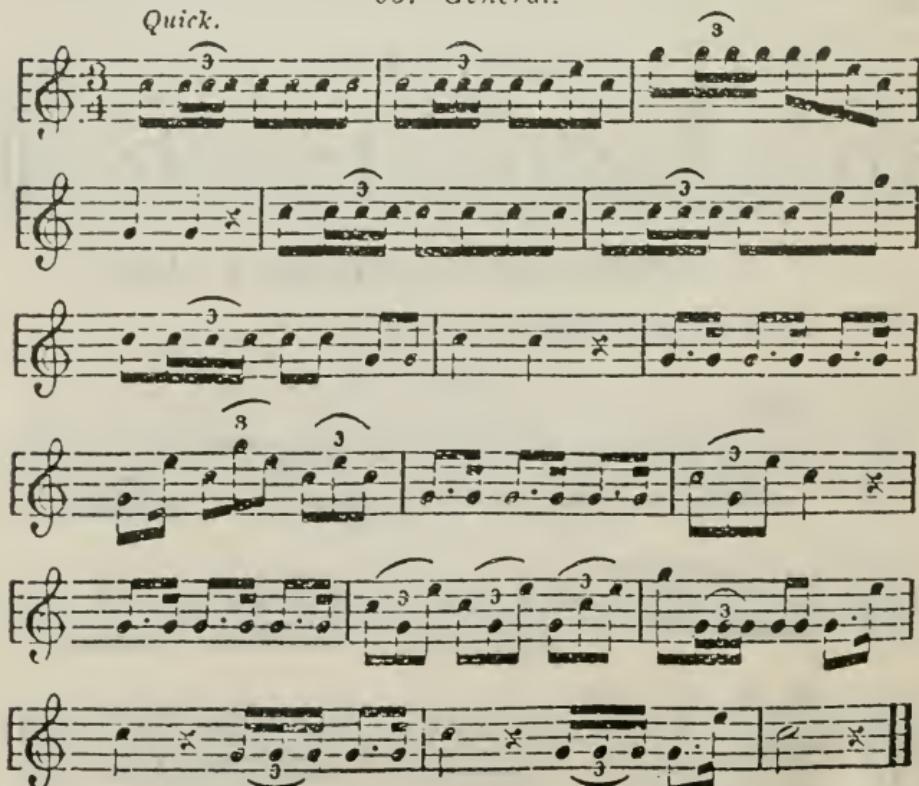
(Ship call—General Muster)

Quick.



Quick.

65. General.



66. *Adjutant's Call.*

Quick.

2/4

Music: Treble clef, 2/4 time. The notation consists of two measures. The first measure has four eighth-note pairs. The second measure has four eighth-note pairs, with the first pair being a grace note.

813. Drill signals.—

67. *Attention (or Silence).**Slow.*

2/4

Music: Treble clef, 2/4 time. The notation consists of three measures. The first measure has a single eighth note. The second measure has a single eighth note. The third measure has a single eighth note with a fermata.

68. *Forward; or, Full Step. MARCH.*
(Or *Man the Drags.*)*Slow.*

3/4

Music: Treble clef, 3/4 time. The notation consists of three measures. The first measure has a single eighth note. The second measure has a single eighth note. The third measure has a single eighth note.

69. *Halt.*

3/4

Music: Treble clef, 3/4 time. The notation consists of three measures. The first measure has a single eighth note. The second measure has a single eighth note. The third measure has a single eighth note.

70. *Quick Time. MARCH**Slow.*

3/4

Music: Treble clef, 3/4 time. The notation consists of three measures. The first measure has a single eighth note. The second measure has a single eighth note. The third measure has a single eighth note.

71. *Double Time. MARCH.*

(Ship call—Bear a Hand)

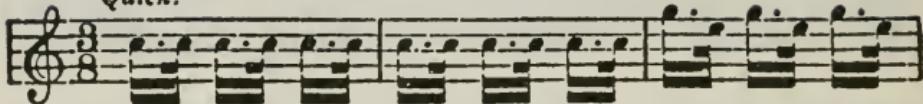
Quick.

8/8

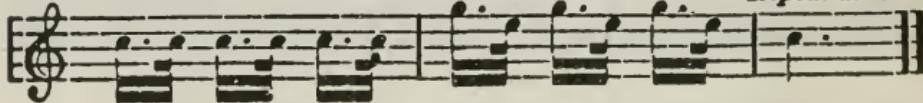
Music: Treble clef, 8/8 time. The notation consists of four measures. The first measure has a single eighth note. The second measure has a single eighth note. The third measure has a single eighth note. The fourth measure has a single eighth note.

72. *Charge.*
(*Ship call—Man Overboard*)

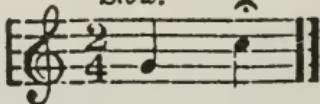
Quick.



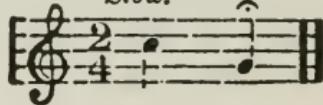
Repeat at will.

73. *Guide Right.*

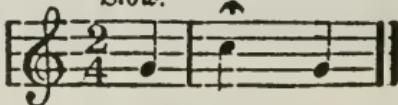
Slow.

74. *Guide Left.*

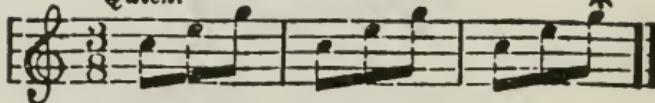
Slow.

75. *Guide Center*

Slow.

76. *Companies.*

Quick.

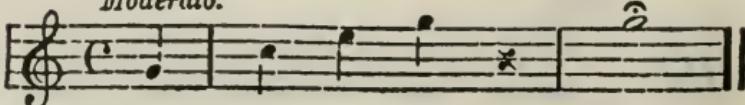
77. *Battalions.*

Moderato.



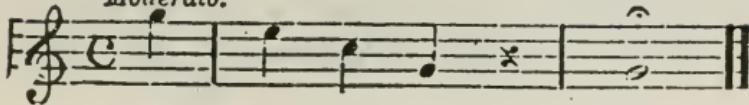
78. *Squads Right; or, By the Right Flank*
(*In Artillery, Sections Right Turn.*) MARCH.

Moderato.



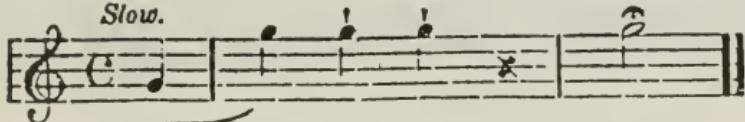
79. *Squads Left; or, By the Left Flank.*
(*In Artillery, Sections Left Turn.*) MARCH.

Moderato.



80. *Squads (In Artillery, Sections) Right About.* MARCH.

Slow.



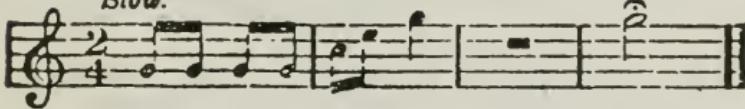
81. *Squads (In Artillery, Sections) Left About.* MARCH.

Slow.



82. *Column Right.* MARCH.

Slow.



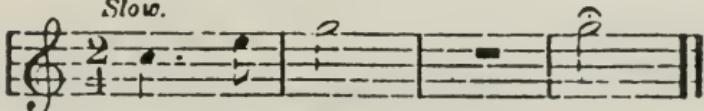
83. *Column Left.* MARCH.

Slow.



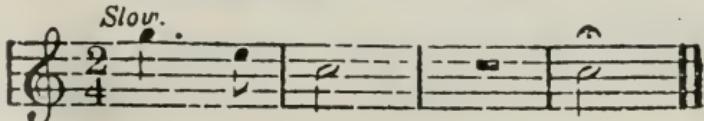
84. *Right Oblique.* MARCH.

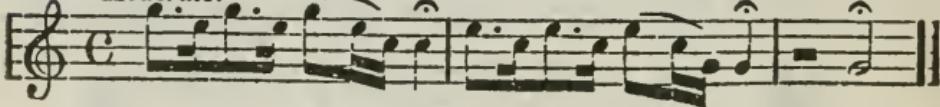
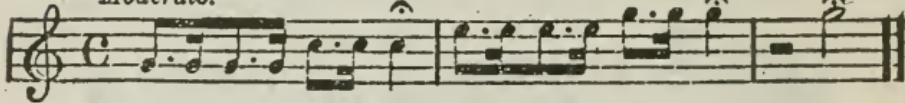
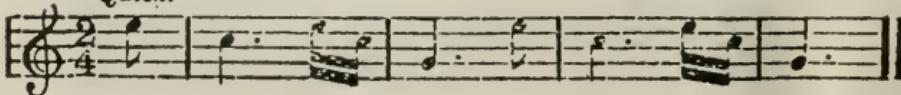
Slow.



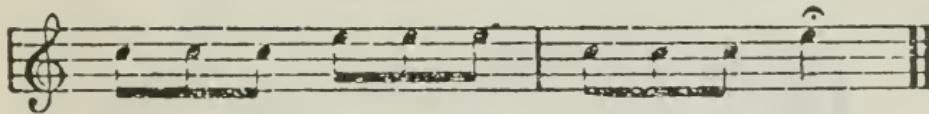
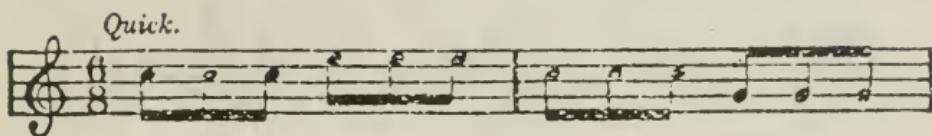
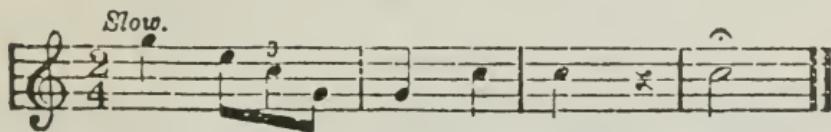
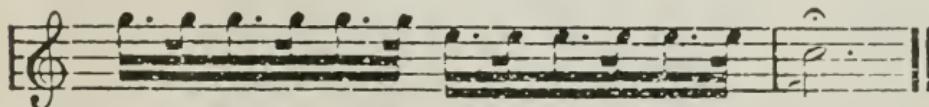
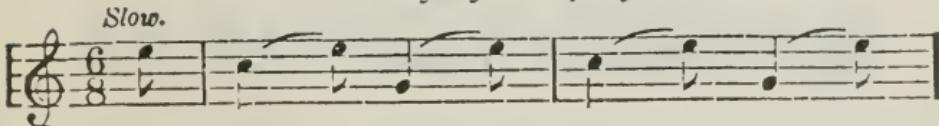
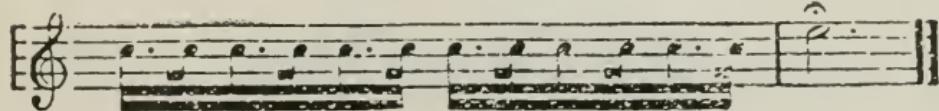
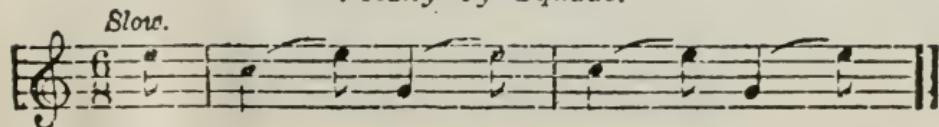
85. *Left Oblique.* MARCH.

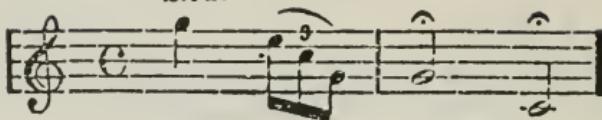
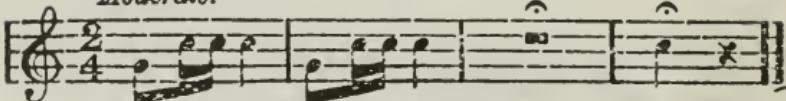
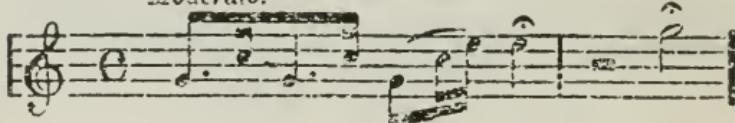
Slow.



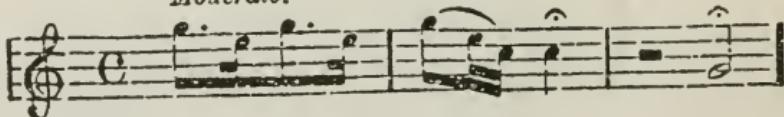
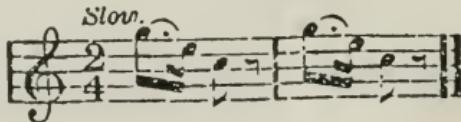
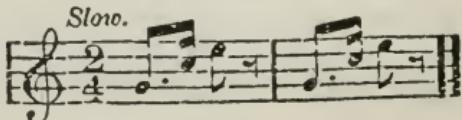
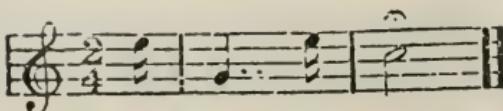
86. *Right Front into Line.* MARCH.*Moderato.*87. *Left Front into Line.* MARCH.*Moderato.*88. *On Right into Line.* MARCH.*(Ship call—Man. Torpedo Defense Battery.)**Moderato.*89. *On Left into Line.* MARCH.*(Ship call—Torpedo Defense Battery in Reserve.)**Moderato.*90. *Company (or Companies) Right.* MARCH.*(In Artillery, Platoons Right Turn.)**Moderato.*91. *Company (or Companies) Left.* MARCH.*(In Artillery, Platoons Left Turn.)**Moderato.*92. *Commence Firing.*
*(Also Commence Coaling.)**Quick.*

93. *Cease Firing.*
(Also Knock off Coaling.)

94. *As Skirmishers.* MARCH.95. *To the Rear.* MARCH.96. *Rally by Company.*97. *Rally by Sections.*98. *Rally by Squads.*

99. *Face to the Rear.**Slow.*100. *In Battery.**Moderato.*101. *From the Right, Front into Echelon.**Moderato.*102. *From the Left, Front into Echelon.*

Note.—From the right (or left) rear into echelon are the same calls as 101 and 102, respectively, followed by FACE TO THE REAR (99).

Moderato.103. *Lie Down.**Slow.*104. *Rise.**Slow.*105. *Route Step. MARCH.*

MARCHES AND QUICKSTEPS.

814. Marches.—

106. President's March.

Quick time.

A page of sheet music for a solo instrument, likely a flute or piccolo, featuring five staves of music. The music is in common time (indicated by 'C') and consists of measures 1 through 10. Measure 1 starts with a half note. Measures 2-4 show a pattern of eighth and sixteenth notes. Measures 5-6 show eighth and sixteenth-note patterns with a fermata over the sixteenth note in measure 6. Measures 7-8 show eighth and sixteenth-note patterns. Measures 9-10 show eighth and sixteenth-note patterns with a fermata over the sixteenth note in measure 10. Measure numbers are written above the staves: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.

107. Commander-in-Chief's March.

Quick time.

The image shows four staves of musical notation. The top staff begins with a treble clef, a 'C' for common time, and a '2' with a diagonal line, indicating a 2/4 time signature. The music consists of eighth and sixteenth note patterns. The second staff begins with a treble clef and a '2' with a diagonal line. The third staff begins with a treble clef and a '3' with a diagonal line, indicating a 3/4 time signature. The fourth staff begins with a treble clef and a '3' with a diagonal line. The music includes various dynamics like 'p' (piano), 'f' (forte), and 'mf' (mezzo-forte), and performance instructions like 'Quick time.' and '3' over a bracket.

Quick time.

108. Rogue's March.

108. Rogue's March.

Quick time.

Three staves of musical notation for a band. The first two staves are in treble clef and the third is in bass clef. The music consists of eighth and sixteenth note patterns. The third staff concludes with the instruction "Repeat at will."

Very slow

109. Funeral March.

109. Funeral March.

Very slow

Five staves of musical notation for a band. The first four staves are in treble clef and the fifth is in bass clef. The music is marked with dynamic instructions "f" (fortissimo), "p" (pianissimo), and "ff" (fortississimo). The score concludes with the instruction "Repeat at will."

815. Quicksteps.—

110. Quickstep No. 1.

Quick.

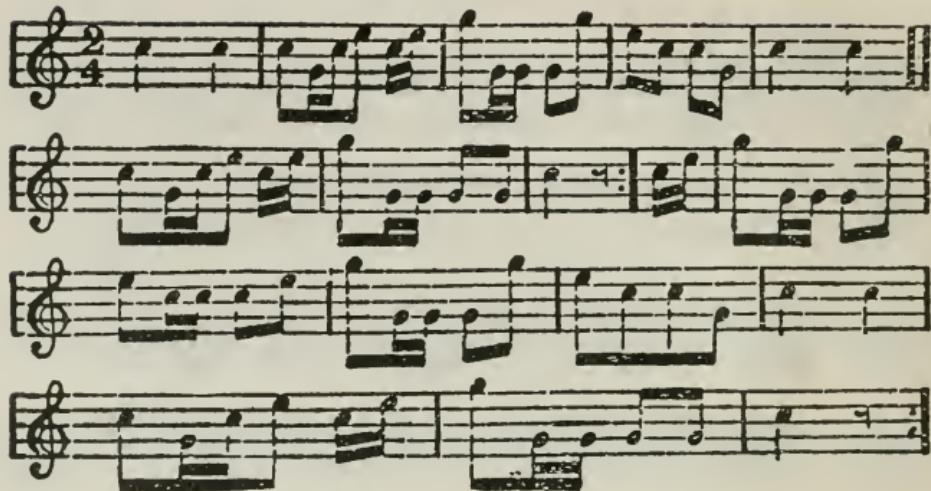
End.

End.

End.

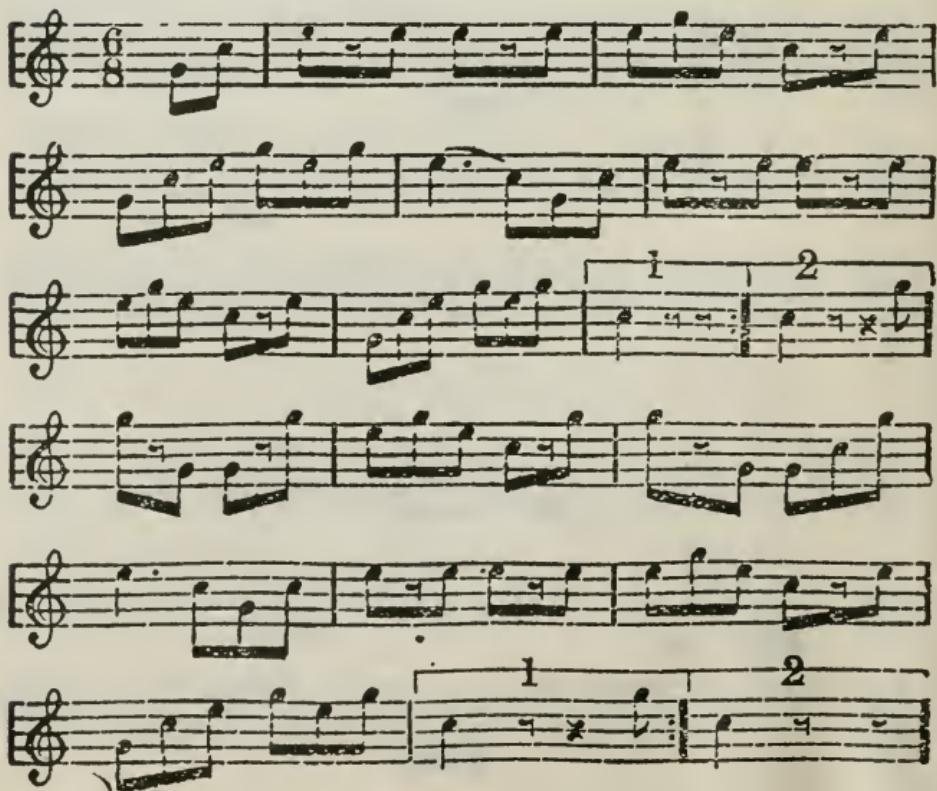
111. Quickstep No. 2.

112. Quickstep No. 3.



113. Quickstep No. 4.

Note.—This may also be used as a double



114. *Quickstep No. 5.*

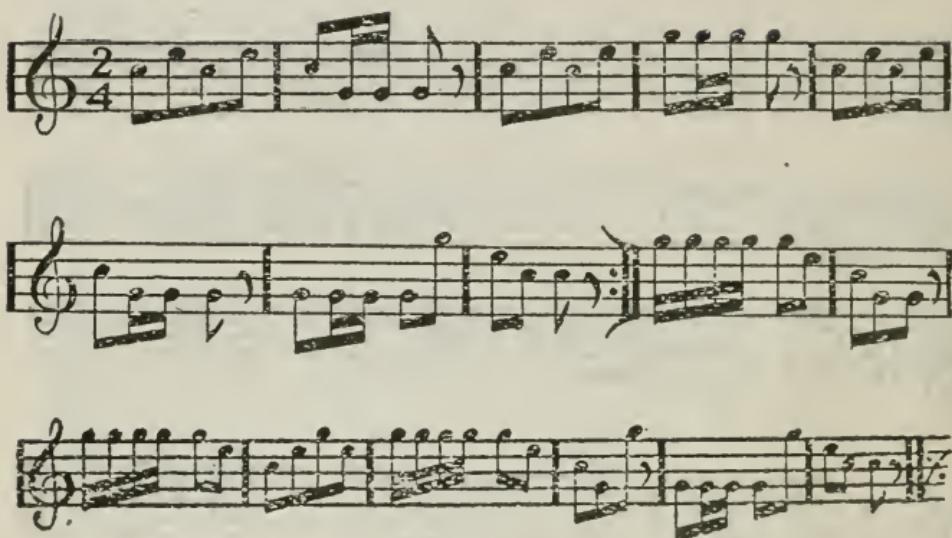
Note.—Used chiefly as a double, but may also be used as a quickstep.

The musical score for Quickstep No. 5 consists of five staves of music. The first four staves are in G clef, and the fifth staff begins with a G clef. The time signature is 6/8 throughout. The music is composed of eighth and sixteenth notes, with several measures containing eighth-note chords. The notes are primarily black, with some white notes appearing in the later staves.

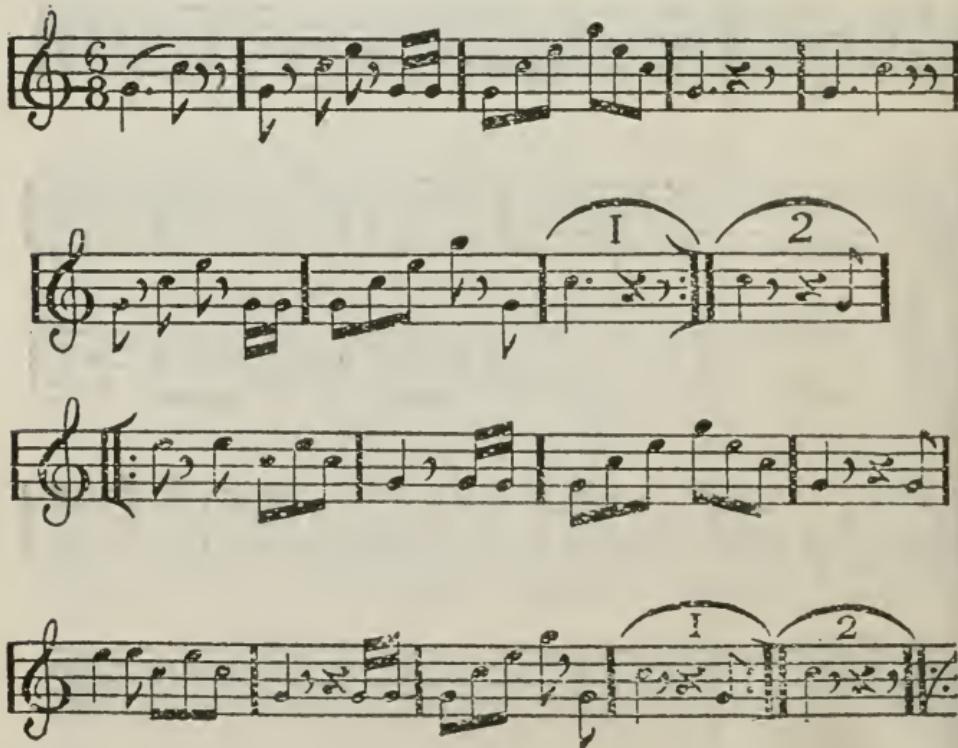
115. *Quickstep No. 6.*

The musical score for Quickstep No. 6 consists of five staves of music. The first four staves are in G clef, and the fifth staff begins with a G clef. The time signature is 6/8 throughout. The music is composed of eighth and sixteenth notes, with several measures containing eighth-note chords. The notes are primarily black, with some white notes appearing in the later staves.

116. Quickstep No. 7.



117. Quickstep No. 8.



118. Quickstep No. 9.

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